

The
**DENTAL
DIGEST**

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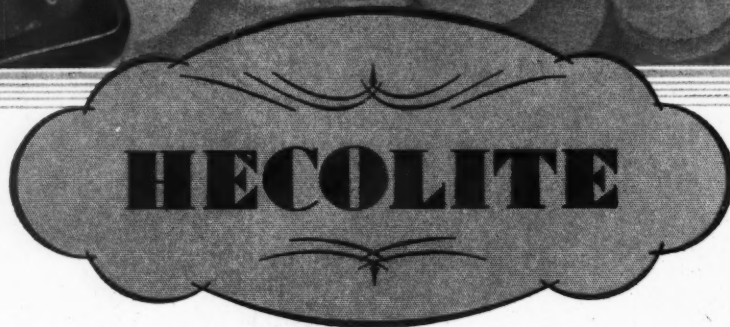
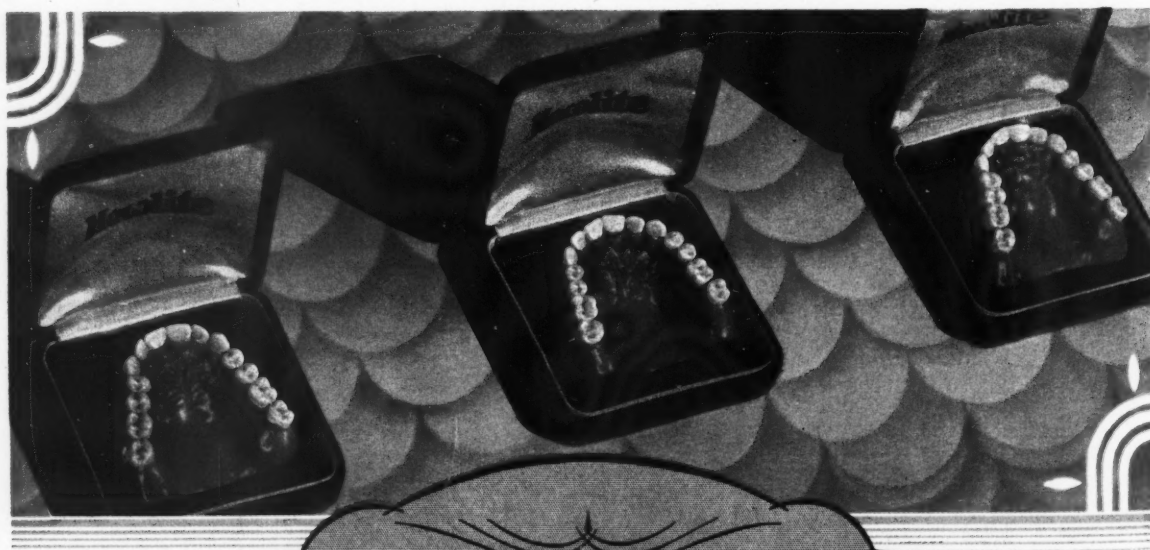
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The DENTAL DIGEST

VOLUME 38

July, 1932

NUMBER 7

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BRIDGE PONTICS WITH PORCELAIN TIPS OR SADDLES

ARTHUR O. KLAFFENBACH, D.D.S.
Iowa City

THE bridge pontic with a porcelain facing as it was used in the construction of the older types of fixed bridges has been the cause of much condemnation because of the unhygienic condition existing around or on restorations of this type. The ground and unglazed ridge-lap of the porcelain facing, and the interproximal spaces filled with solder, in the older types of fixed bridges, prevented the efficient use of dental floss because of the permeation of secretions and the adherence of mucin and food to the porous and unglazed porcelain in contact with the ridge tissue.

The gingivo-lingual area with its poor lingual contour and its broad area of ridge-lap in tight contact with the ridge became unsanitary, because of the recesses or shelves that developed and permitted the accumulation and retention of food, irrespective of the patient's efforts to remove the food with the toothbrush or dental floss.

The pontic with its porcelain tip or saddle, which is in slight and minimum area contact with the normal ridge, has removed from the fixed bridge restoration the many objections to the older types of pontics.

All properly constructed porcelain surfaces should be highly glazed, and should be made of porcelain that will maintain this high glaze throughout the life of the restoration, thereby preventing tissue irritation, porcelain permeation, and the adherence of food debris, or formation of mucin plaques. All surfaces should be convex. Interproximal spaces, embrasures, and anatomic form of the pontics should be properly developed so that food will not lodge or be retained, but will be properly deflected. The adjacent tissue will thus be massaged and maintained in a state of health.

Because of the accessibility of all surfaces, the patient, with the aid of a toothbrush and dental floss, can readily massage the underlying tissue and maintain the same degree of cleanliness as is possible with the natural teeth.

TYPES OF PONTICS INDICATED

Best results are obtained when the ridge is healthy and complete resorption has taken place. The porcelain-tipped pontics cannot be used where there is not sufficient length gingivocclusally; therefore, they are generally limited to pontics of average length or longer.

The spheroidal type (Fig. 1, B and D) is best adapted for use in the posterior region, and the saddle type (Fig. 1, A), for esthetic reasons, to the anterior region.

The so-called root implantation (Fig. 1, C and E), in which the tip is placed in the root socket immediately following extraction, is not considered advisable. Clinical observation in many cases of this type gave evidence that root implantation is not always as sanitary as was formerly supposed. On removal of the pontic, in many instances, at least a portion of the mucous membrane that lines the socket was found to be more or less reddened under the pseudo-root, indicating an inflammatory condition. Our present knowledge of the possibilities of focal infection makes this root implantation a questionable procedure.

A partial denture that is constructed before extraction, placed immediately after extraction, and worn by the patient until ridge conditions warrant the bridge restoration is much safer and more satisfactory.

TECHNIQUE

1. *Accurate casts with the abutments in position* are properly mounted on an anatomic articulator, and facings of the proper size, shade, and mold are selected.

2. *Preparation of Facings*—The long pin facing is ground convex on the mesial and distal surfaces to enlarge the interproximal spaces (Fig. 2, B). The gingival should then be ground to the required contour (Fig. 2, D). When the facing is narrowed mesio-distally, as shown in Fig. 2, G, the buccal surface must be ground so that the buccal embrasure will be maintained (Fig. 2, J).

3. *Core or Matrix*—The ground facings are then waxed firmly in position on the mounted cast (Fig. 3, A and B). A wall of plasticine is then placed on the cast outlining the periphery of the matrix to be made. After a coat of separating medium is applied to the portion of the cast within the outline of the clay, plaster is poured into the matrix formed by the clay wall (Fig. 3, C). When the plaster has set, the clay and plaster are removed with the facings. The plaster is then trimmed so that it extends over the occlusal or incisal portions and exposes the gingival areas of the facings (Fig. 3, D and G). This core holds the facings in the proper position and facilitates the grinding and fitting of the tips or saddles to the ridge.

After the tips or saddles have been fused to a high glaze they are again waxed into place and another core is made, covering the gingival and labial or buccal surfaces, but not extending to the occlusal edges (Fig. 3, E, F, and H). The core holds the facings with baked tips in place while the wax is being adapted and carved.

4. *Porcelain Selection*—A medium-fusing porcelain (about 2300° F.) should be used for the tips. The low-fusing porcelains are not satisfactory because in many instances they are apt to become pitted or lose their high glaze. This is due to the fact that their high flux content is not able to withstand the reaction of the saliva.

5. *Selection of Shade*—A porcelain simulating the shade of a root of a natural tooth may be selected, or the body color may be matched with the gingival portion of the facing. The S. S. White formula selector may be used to determine which porcelain powders to use to obtain the body color of the S. S. White, Just, or Twentieth Century facings.

6. *Pink Porcelain*—In some instances, when there has been considerable loss of tissue, the use of pink porcelain is indicated, or advantageous, as shown in Figs. 9 and 10. In this particular case the removal of

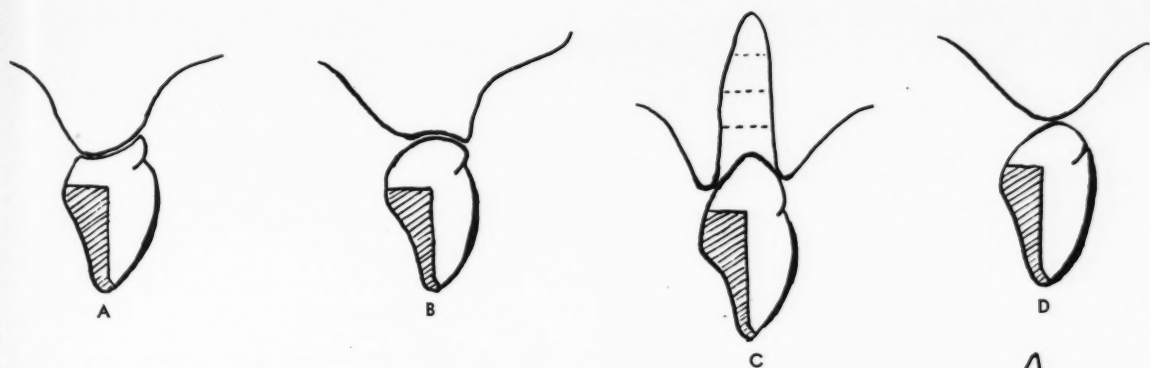


Fig. 1—A, Saddle type pontic best adapted for use in the anterior region; B, spheroidal type for posterior region; C, root implantation; D, spheroidal pontic; E, root implantation.

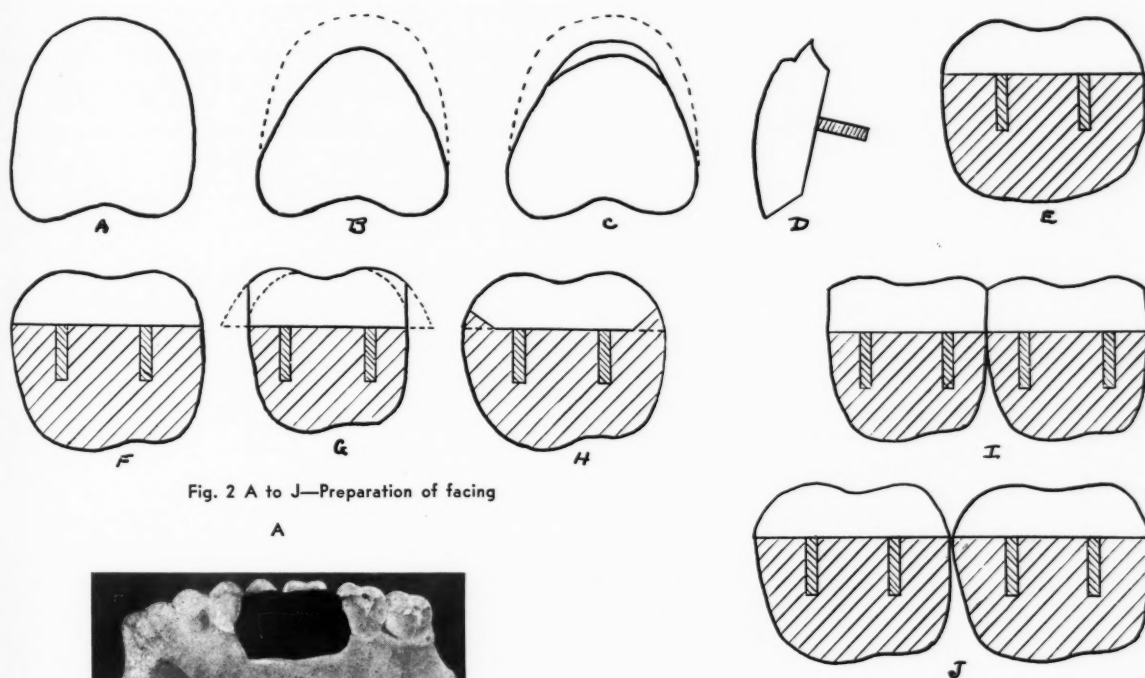


Fig. 2 A to J—Preparation of facing

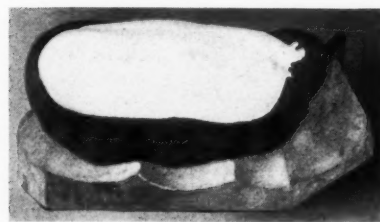
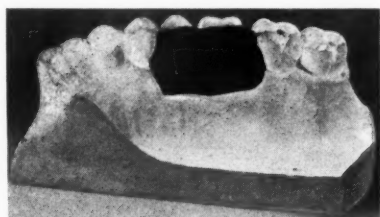


Fig. 3—A and B, Ground facings waxed in position on mounted cast; C, plaster in the matrix formed by the clay wall

a cyst necessitated the loss of the labial plate of the alveolus in the edentulous area.

The correct blending of the pink porcelain is best accomplished by making trial bakes of porcelain, blue, yellow, or white being used as modifiers.

7. Developing the Tip or Saddle—A portion of porcelain powder is placed in a dappen dish; distilled water is added, and the mix is stirred with a glass rod until it is stiff.

The facing is placed on a suitable holder and the moist porcelain applied with a small sable hair brush (Fig. 5, A). When sufficient moist porcelain has been applied, the facing is dipped into dry porcelain powder which absorbs some of the moisture (Fig. 5, B). The bulk of the dry powder is then brushed off (Fig. 5, C) and the facing, with the powder adhering, is vibrated with a porcelain instrument as shown in Fig. 5, D. This brings the moisture to the surface where it can absorb the adhering dry powder. The surplus moisture is then absorbed with bibulous paper (Fig. 5, E), or the facing may be dipped into the dry powder and again vibrated. This process is repeated until an oversized tip has been obtained which is thoroughly condensed and free from moisture. It is then brushed with a large camel's hair brush, and care is taken to remove any particles of porcelain powder remaining on the labial or buccal surface of the facing (Fig. 5, F).

The facing with the packed porcelain tip is carefully removed from the holder and placed on a rack made of alundum cement (corundum) in which 22 gauge platinum wire has been fused (Fig. 6).

8. Fusing or Firing—The facing thus mounted is placed on a fire clay tray on top of the furnace and allowed to dry slowly. After a temperature of 1600° F. has been reached on the first button of the rheostat, the mounted facing is placed inside the muffle near the thermo-couple. The door is left open until the porcelain has resumed its color and the gases have escaped. The door is then closed and the lever moved to the second button.

The low heat, slow-firing technique is used to bring it to a high biscuit-bake. If S. S. White, 2300° F., porcelain is used it will require from five to six minutes at 2100° F., or about seven minutes at 1800° F. for the Twentieth Century porcelain to obtain a high biscuit-bake. At the end of this time, the current is turned off and the furnace allowed to cool, or the tip may be removed immedi-

ately and placed on an asbestos pad and covered with a glass tumbler or a jeweler's cover glass, where it is kept until cool. If properly fired all shrinkage will be eliminated, but the porcelain will not be completely vitrified or fused.

9. Grinding and Fitting Tip—When the tip is cool it is removed from the rack and ground to the required shape, the core (Fig. 3, D and G) being used as an aid in holding and fitting the tip to the ridge and in obtaining the proper contour.

10. Fusing of Porcelain—After the tip has been ground to contour and any small cracks have been filled with porcelain, it is again placed in the muffle. The low heat, slow-fusing technique is used to complete the fusing or to obtain the high glaze.

S. S. White, 2300° F., porcelain, after 2200° F. has been reached, should be held at this temperature for about six minutes, and Twentieth Century, about seven minutes at 1900° F. At the end of the required time the current is turned off and the porcelain is allowed to cool slowly in the furnace.

11. Grinding for Backing—In order that the wax pattern may be shed without distortion, the flat incisal or occlusal surface of the tip must be ground true and parallel with the pins, or slanting slightly rootwise (Fig. 7 A, a). This is best done with a carborundum disc. The entire periphery, including the incisal or occlusal edge of the facing (Fig. 7, A and B), is then beveled, and a finishing line for the gold backing is developed.

When it is necessary because of a close bite to reduce the thickness of the pontic labio-lingually and at the same time amply to protect the facing with sufficient thickness of gold, the facing may be ground away on the lingual surface as shown in Fig. 7, B and D and Fig. 8, C and D.

12. Obtaining the Wax Pattern—A thin coating of oil or cocoa butter is applied to facilitate the shedding of the wax pattern. A piece of hard inlay wax is softened and thoroughly adapted with the aid of a piece of rubber dam or china silk pulled tightly against the wax. The surplus wax is then trimmed away and the porcelain with the wax backing is placed in the core in the proper position on the cast. A softer inlay wax is then softened and added on the lingual surface to the harder wax in sufficient quantity for full contour to be obtained.

The occlusal surfaces of the teeth on the opposing cast are then closed in centric relation and triturated on

the soft wax. The core holds the porcelain in correct position. The wax is then carved to correct occlusion and contour and removed from the porcelain. A piece of sticky wax attached to the buccal surface of the facing will aid in its removal from the wax pattern.

13. Investing Wax Pattern—Before investing the wax pattern provision must be made for maintaining the openings into which the pins of the facings fit. Generally, carbon rods, which have been previously heated to a cherry red to remove the gas, are used; or German silver wire pins may be used and later removed by dissolving them with nitric acid. Another method to use for posterior pontics is to drill occlusally through the wax pattern until the pin holes are reached. Investment material is then pumped down and through the pin holes until it comes out on the buccal surface. After casting has been done the investment material is removed with the point of an explorer.

A high heat expansion investment is used for investing the wax pattern. Before investing, however, all traces of oil must be carefully removed from the wax pattern. A kitchen cleanser and a brush may be used for this purpose. The investment is then applied, but one should make sure that it is accurately adapted and that the pins or carbon rods are not moved.

14. Castings—A high heat expansion technique is used. When sufficient thermal expansion of the investment cannot be obtained to compensate for the shrinkage of the gold, a water bath for obtaining additional wax expansion will be necessary. Gold of sufficient hardness to meet the requirements of the case should be employed.

15. Assemblage—After the gold backing has been cleaned and fitted to the facing it is again placed in the core and waxed into proper occlusion and relation to the abutments and ridge.

The remainder of the procedure is the same as for any other bridge.

16. Finishing Glaze—If, when the bridge is tried in the mouth, the tip or saddle of the pontic exerts pressure upon the tissue, it must be relieved by grinding. This ground area must be reglazed before the bridge is permanently set. As firing the porcelain again would materially affect the quality of the porcelain and cause the peripheral edges to become rounded, some other means for obtaining a glazed surface must be employed. For this purpose a finishing glaze or superglaze is used which fuses at a lower fusing point than the porcelain used in the tip, but not of such a low

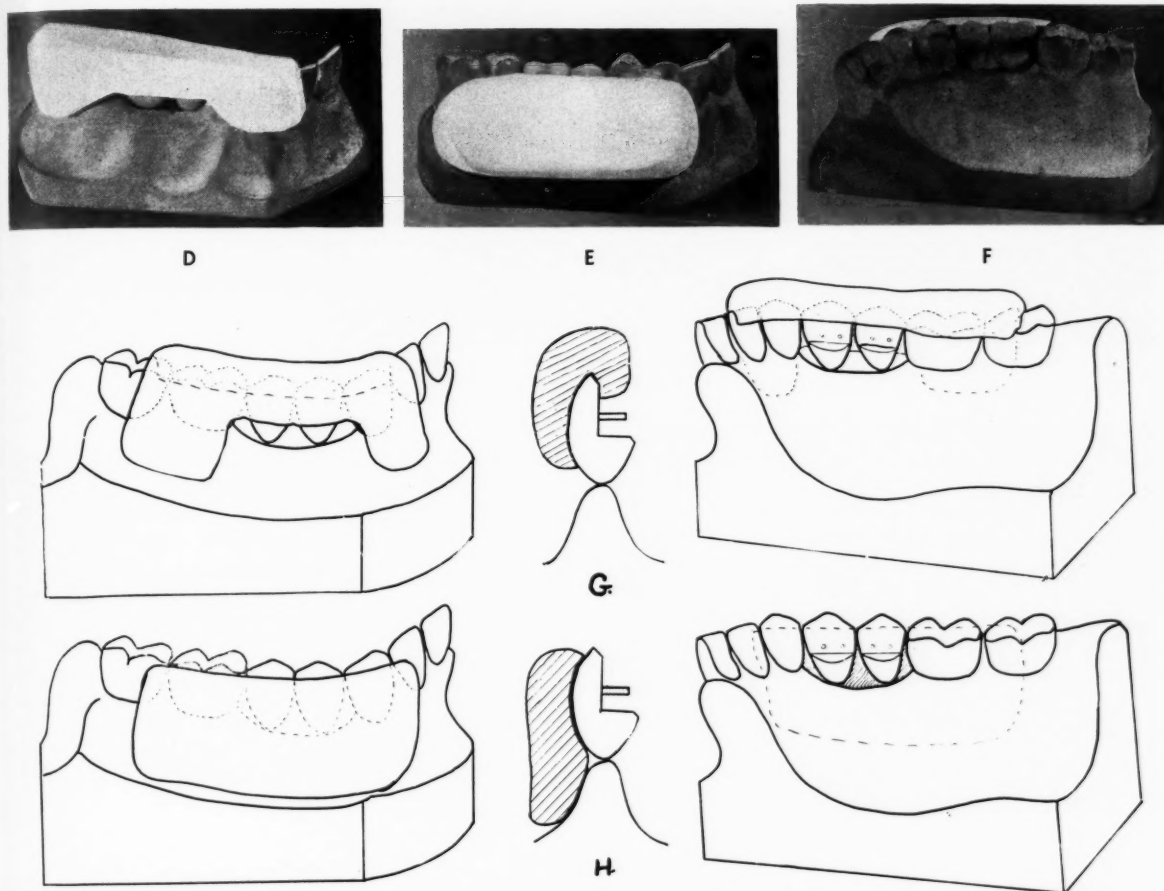
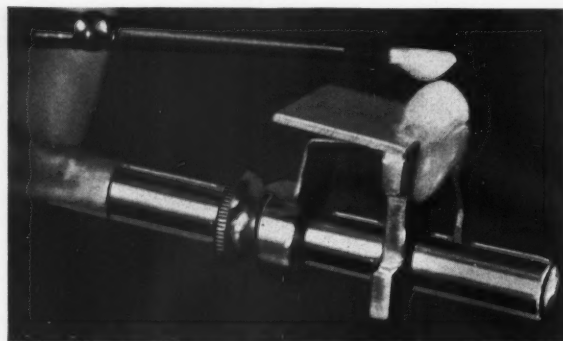


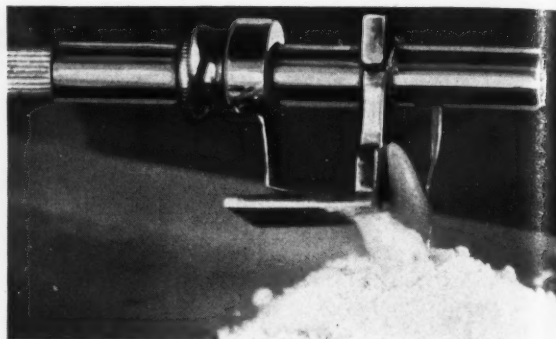
Fig. 3—(Continued)—D and G, plaster trimmed to expose gingival areas of facings; E, F, and H, core covering gingival and labial tips in place while wax is adapted and carved.



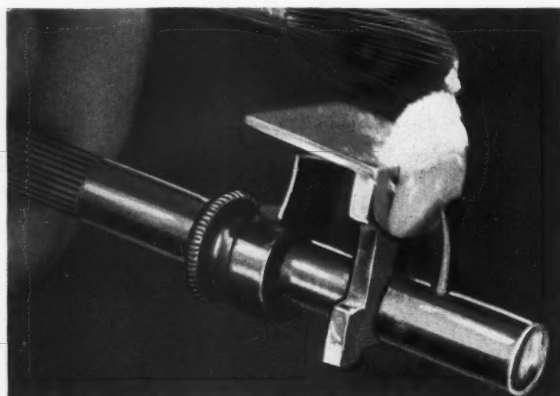
Fig. 4—Armamentarium for construction of bridge pontics with porcelain tips or saddles.



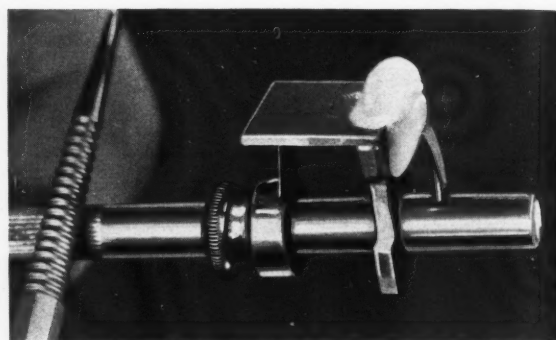
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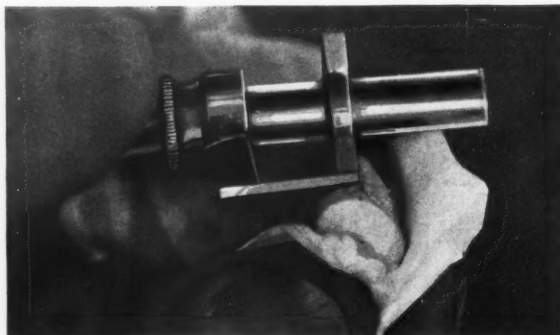
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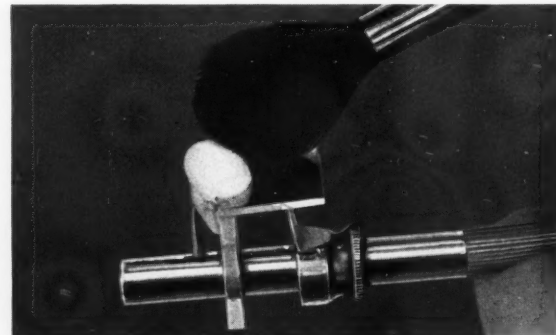
C



D



E



F

Fig. 5—A, Moist porcelain applied to facing with small sable hair brush; B, moist porcelain dipped into dry porcelain powder to absorb some of the moisture; C, bulk of dry powder being brushed off; D, vibrating with a porcelain instrument; E, bibulous paper being used to absorb surplus moisture; F, large camel's hair brush used to remove particles of porcelain powder from the labial and buccal surface of the facing.

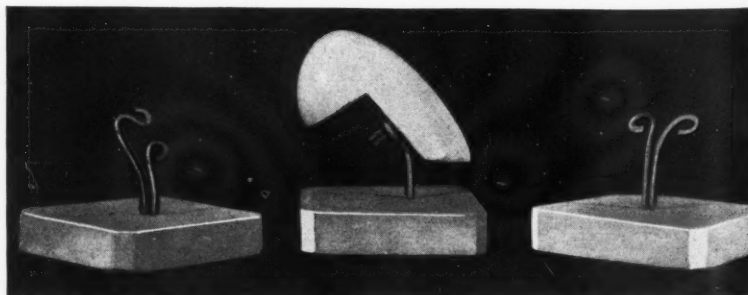


Fig. 6—Facing with packed porcelain tip on rack made of alundum cement in which 22 gauge platinum wire has been fused.

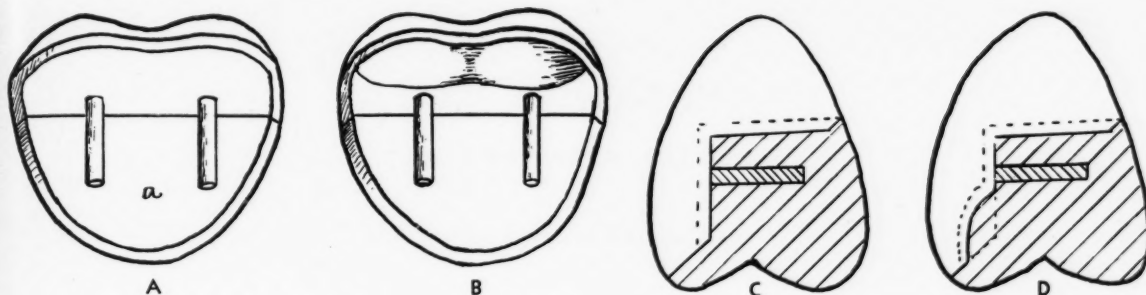
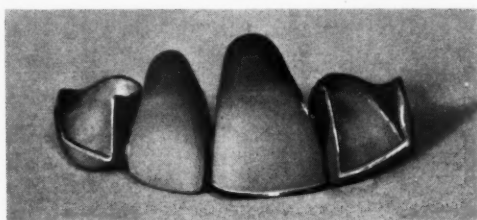
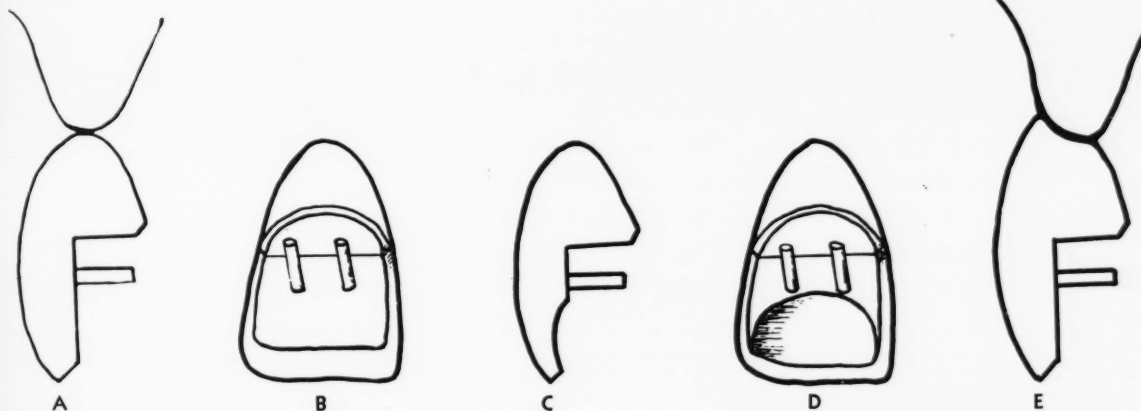


Fig. 7—Grinding for backing. B and D, ground on lingual surface for additional thickness of gold. E, ground, slanted, and porcelain built on buccal and gingival surfaces to produce a shorter pontic.

Fig. 8 (below)—Facing ground away on lingual surface to reduce thickness of pontic labio-lingually because of close bite.



Figs. 9 and 10—Pink porcelain used to advantage because of considerable loss of tissue.

fusing point that it will be affected by the fluids of the mouth. For satisfactory results the technique recommended by the manufacturer should be used.

The addition of a dye, such as the Gypsy rose cerise liquid dye or Diamond Dye, to the liquid, which is generally composed of equal parts of glycerin and distilled water, brought to a boil, will aid in the application of the finishing glaze. The dye does not affect the shade of the porcelain

to which it is applied as it burns out before the glaze is fused.

If the tip or saddle is too short and requires additional porcelain no attempt should be made to build it up with the finishing glaze material. The glazes, being of different composition from that of the porcelain, act differently, and should be applied in thin layers or coats. The fusing is done after each layer has been applied.

When it is necessary to add more porcelain after the tip has been fused,

a porcelain of a lower fusing point must be used. A chart prepared by S. S. White, showing the results of fusing temperatures by mixing high-fusing, medium-fusing, and low-fusing porcelains in different proportions, is an aid in modifying the porcelains to produce a porcelain of the fusing point desired.

The lower-fusing porcelain is added to the tip or saddle in sufficient amount and brought to a high biscuit-bake. It is then ground to proper contour and fit and fused.

GRANDFATHER MOLAR

A DENTAL HEALTH PLAYLET*

LON W. MORREY, D.D.S.

Chicago

Presented under the Auspices of

HERMAN N. BUNDESEN, M.D.

We are rapidly becoming conscious of the fact that dental decay is more than an oral disease. It is the local manifestation of a systemic disturbance. It may be caused by deficient nutrition, glandular inefficiency, underexposure to sunlight, lowered metabolism, lack of hygiene, or a combination of any of these conditions, or more.

The important point is that, under these circumstances, the filling of cavities alone, no matter how well performed, will never successfully retard decay. We must supervise child growth, regulate the child's development, and teach him the fundamentals of healthful living as we know them. Then, and only then, will we be able to say with any degree of satisfaction, "These children have sound teeth in healthy bodies."



President, Chicago Board of Health

CAST

GRANDFATHER MOLAR
BOY
MOTHER NATURE
BUGLER
MILK
VEGETABLES
FRUITS
PROTEIN FOODS
FATS
CLEANLINESS
WHOLE WHEAT
DENTAL ATTENTION
CHORUS—DANCERS

SCENERY

A large book 6½ feet high and 4 feet wide. The book cover is hinged so that it can be opened and closed by the bugler who stands at center of stage. Outer cover of book is of blue cloth or paper on which are the words BUILDING GOOD TEETH in six-inch

letters. The stage on each side of book is draped with curtains or with home-made scenery.

COSTUMES

Grandfather Molar wears a large, white cardboard figure of a molar. The other costumes can be fashioned of crêpe paper or cloth to suit the fancy.

SONGS

Opening Song....."Story Book Ball"
Second Song...."East Side, West Side"
(Sung to the tune of "Sidewalks of New York")
Third and Final Song.....
....."Good Night Children"
(Sung to the tune of "Good Night Sweetheart")

WORDS FOR SECOND SONG

East side, west side, all around the town
Tots are building better teeth
A thing of great renown
Foods that contain minerals
It's our firm belief
Eaten each day at meal time
Help to give us better teeth.

Inside, outside, around around around
That's the way to brush your teeth
And also up and down
Use your paste or powder
At least twice a day
Or after every meal time
Then laugh at tooth decay.

East side, west side, all around the town
Folks are learning dental care
An act of great renown
Have your teeth inspected
At least two times a year
And in this way prevent decay
And toothache never fear.

WORDS FOR FINAL SONG

Good night children, start anew tomorrow
Good night children, banish dental sorrow
Pain and aching that's caused by decay
Banish for aye—you now know the way
(So we'll say) Good night children
Though we're not beside you
Good night children, let our story guide you
Do's we've told you
And your teeth will cease to scold you
Good night children, good night.

Opening Chorus...."Story Book Ball"
As chorus leaves stage, small boy enters from right side and walks slowly across stage to center. Stops and stares at Grandfather Molar who is standing at left of stage.

Boy: I beg your pardon if I stare at you
But what's your name and what do you do?
I've lived around here for a year or more
But I have never seen you before.

Grandfather: I am a servant and a servant I'll be
As long as my master has need of me.
Day in, day out for sixty years
I've served him well through joy and tears.

*Editor's Note: Through the cooperation of the Parent-Teacher Association of the Eugene Field School, Chicago, the Bell-Howell Company, and the Chicago Dental Society, this playlet was staged and a moving picture was made. This picture has been shown before the National Congress of Parents and Teachers at Minneapolis and various dental societies. The film is available without charge for showing before any interested group. For further information, please write to the Chicago Dental Society, 185 North Wabash Avenue, Chicago.



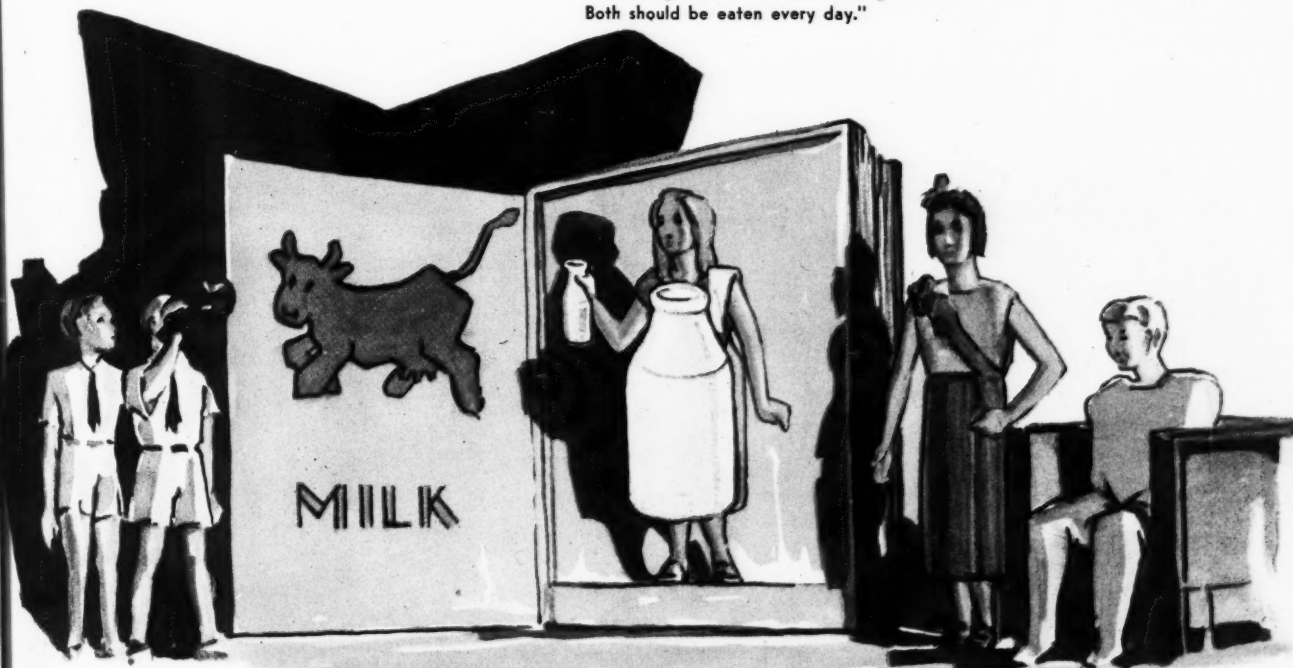
"Are you one of those six-year molars my Teacher talks about?"
 "Aye, call me six-year molar, if you will.
 'First permanent molar' is better still."



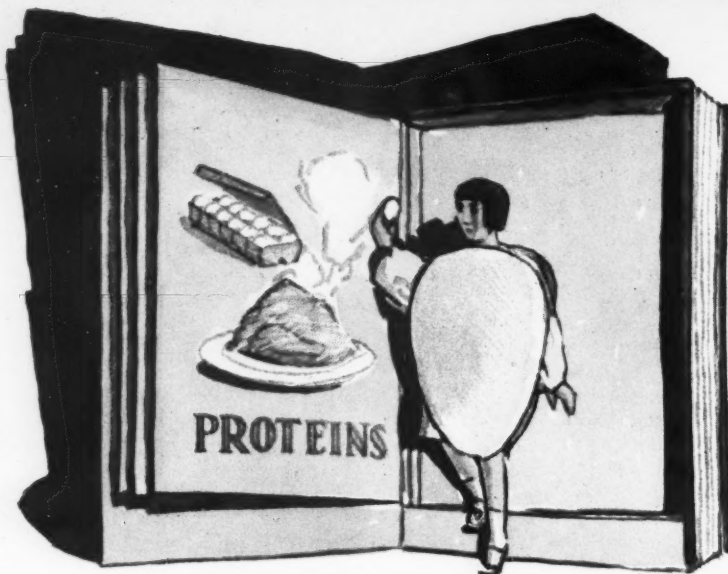
"In fruit you find a trusty friend
 Ready and willing her strength to lend."



"This . . .
 Is whole grain cereals and whole grain bread.
 Both should be eaten every day."



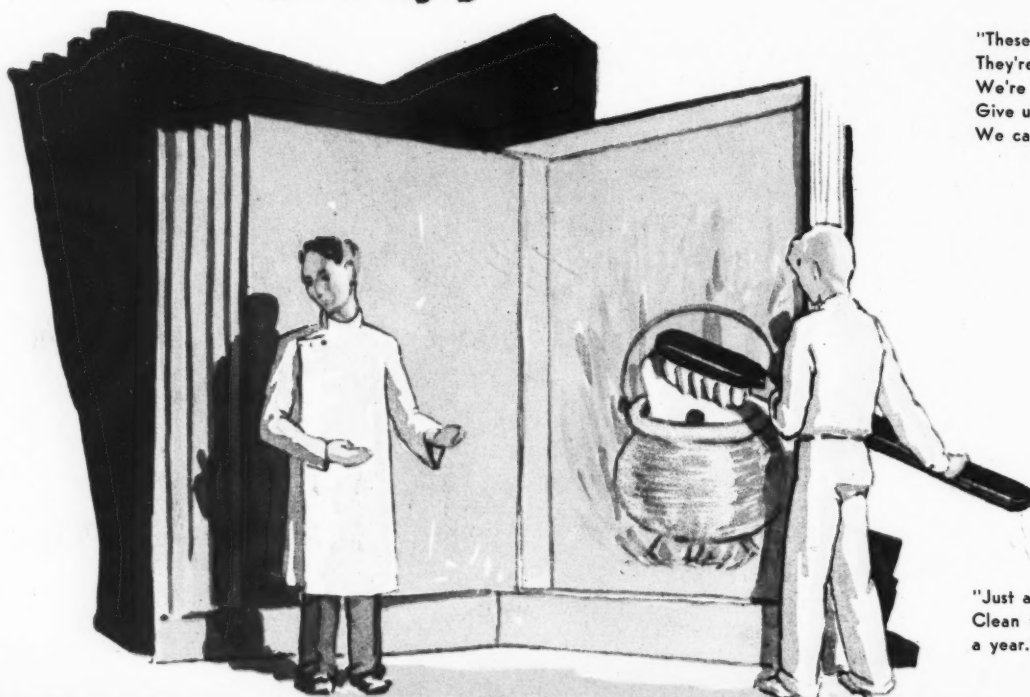
"There are six groups of foods we need every day;
 And milk is the most important, they say.
 Nature's natural food for man—
 Improve upon it if you can."



"Every child that's busily growing
Needs some foods each day that're going
To build new tissue and new cells.
These are the foods that do that well."



"These are my servants;
They're your servants, too.
We're eager and willing to work for you.
Give us a chance; we'll show you the way
We can build teeth that will not decay."



"Just as soon as new teeth appear
Clean them and thus preserve them for
a year."

Once he was young and strong like you,
 And I was young and handsome too;
 Now he is withered, old, and gray,
 And I—well, I have had my day.
 My coat was once as white as rime
 It's yellow now and seared by time.
 No longer can my master play
 Nor work as in his younger day
 And I—and I, forsooth,
 Am but a yellow, aged tooth.
 But underneath this yellow cloak
 My heart is sturdy as an oak,
 And even though my back is bent
 And worn, my strength is far from spent;
 And daily at the dinner table
 I take great joy in being able
 To cut and grind in pieces neat
 My master's vegetables and meat.
 My shoulders once, like yours, were square
 But look, there're now no shoulders there.
 The constant grinding, constant wear
 Has left them shapeless, worn, and bare.
 But look you—look me over, please;
 My coat's unsullied by disease.
 Though sixty years have passed my way
 I'm still untouched by dread decay.

Boy: Are you one of those six-year molars my Teacher talks about?

Grandfather: Aye, call me six-year molar if you will.
 "First permanent molar" is better still.
 But run along now and please be good.
 I want to rest as an old man should.

Boy: O please, Mister Molar, don't send me away.
 I'd much rather listen to you than to play.
 One thing, Mister Molar, I wish that you'd tell—
 Why is it you've always continued so well?
 You still have your health, you work every day;
 You never are bothered with disease or decay.

Grandfather: Why, that's very simple; if you will but look,
 I'll read you that story out of this book.
 Good teeth, like myself, depend on three rules,
 Which, by the way, should be taught in all schools.
 Diet is first—Without proper food
 It's hard to build teeth whose enamel is good.
 Cleanliness next—I want you to know
 That teeth should be brushed whiter than snow.

Last, but not least, for tooth retention
 Is early and regular dental attention.
 But here take this chair; I'll show you today
 How we built teeth in your grandfather's day.
 Yo ho! Mother Nature! Come hither,
 GadZook,
 And read us a chapter from your story book.

Enter Mother Nature accompanied by two trumpeters. Mother Nature stands in center of stage. Trumpeters stand on each side of book.

Mother Nature: Did you call me, Sire?

Grandfather: Aye! Dame Nature, I beseech you in truth
 To show this young man how you build a tooth.

Mother Nature: Certainly, Sire. *(Turns to audience)*

Grandfather Molar has asked me to-day
 To build you a tooth that will not decay.
 My story is short. It's not very new,
 So if you'll be quiet I'll read it to you.
 My recipe book as you shall see
 Has Chapter One, and Two, and Three.
 In Chapter One I'll try to show
 That nutrition will make strong teeth grow.
 What part, you ask me, can nutrition play
 In preventing the progress of dental decay?
 What part, indeed—but let's take a look
 In Chapter One of our story book.

Mother Nature claps hands. Buglers blow bugle. Boy opens book cover displaying caption, GOOD FOOD BUILDS GOOD TEETH. On one side of page is picture of milk bottle over which is caption, MILK. Milk bursts through page of book and walks to left front of stage. Boy closes book cover.

Mother Nature: There are six groups of foods we need every day; And milk is the most important, they say.
 Nature's natural food for man—
 Improve upon it if you can.
 Another food group we must not overlook
 We'll find on page two of our story book.

Mother Nature claps hands. Trumpets blow. Boy opens book cover disclosing same caption, GOOD FOOD BUILDS GOOD TEETH. On

one side of page is picture of whole wheat bread and cereals with caption, WHOLE WHEAT. Whole wheat character bursts through page and walks to right center of stage.

Mother Nature: This second food factor, as you no doubt have read,
 Is whole grain cereals and whole grain bread.
 Both should be eaten every day
 To guard your teeth from dread decay.
 A third group of foods needed for teeth
 We'll read all about on the very next leaf.

Mother Nature claps hands. Trumpets blow. Boy opens book cover disclosing caption, GOOD FOOD BUILDS GOOD TEETH. Picture of vegetables is seen on page under caption, VEGETABLES. Character representing vegetables bursts through page and stands beside Milk.

Mother Nature: Oh! Here are the foods, the cabbage and greens,
 Lettuce, and lentils, and lowly string beans.
 Two or three vegetables every day
 Will also help you ward off decay.
 With your kind indulgence we'll now take a look
 At the fourth food pictured in our story book.

Mother Nature claps hands. Bugles. Boy opens book cover disclosing caption again, GOOD FOOD BUILDS GOOD TEETH. Under caption, FRUITS is a picture of fruits. Character representing fruit bursts through page and takes place beside Whole Wheat. Boy closes book.

Mother Nature: In fruit you find a trusty friend
 Ready and willing her strength to lend.
 Eat some fruit with every meal
 And see how good it will make you feel.

(Pause)

Time is passing as time will do
 And I've two more groups to show to you.

Claps hands. Bugles. Boy opens book cover disclosing caption, GOOD FOOD BUILDS GOOD TEETH. Under caption, PROTEINS on page is seen picture of an egg, of meat, fish, and cheese. Character representing these foods jumps forth from page. Boy closes book.

Mother Nature: Every child that's busily growing

Needs some food each day that's going
To build new tissue and new cells.
These are the foods that do that well.

(Pause)

Now page six of Chapter One
And with nutrition we'll be done.

Claps hands, etc. Picture of cream, butter, and fats on page. Fats bursts through the page.

Mother Nature: A small amount of fats each day
Will help to keep disease away.
During Winter's long gray mood
Add some fats to your daily food.

(Pause)

And now let's turn to Chapter Two
And see what we can learn from you.

Claps hands. Bugle blows. At top of page is caption, CLEANLINESS. On one side of page is picture of toothbrush and tooth paste. Character representing cleanliness bursts through the page onto stage.

Mother Nature: Your time we do not need to waste
In introducing brush and paste.
I'm sure you do not need my warning
To use them every night and morning.

(Pause)

And now Chapter Three calls your attention
To one more aid in decay prevention.

Claps hands, etc. Caption at top of page reads DENTAL ATTENTION, under which is picture of dentist. Dentist bursts through the page.

Mother Nature: I think, my friends, you will agree
That this is our friend, Child Dentistry.
Only through early and regular attention
Can your dentist help you in decay prevention.

(*Mother Nature points to all the characters on the stage.*)

Mother Nature: These are my servants;
They're your servants, too.
We're eager and willing to work for you.
Give us a chance; we'll show you the way
We can build teeth that will not decay.

(*Song by entire cast to the tune of "Sidewalks of New York."*)

Mother Nature: Now, my friends, as an added attraction
Our little cast will go into action,
And right before your very eyes
Build a tooth you all would prize.

Mother Nature claps her hands. Bugle blows. Page opens book disclosing caption, BUILDING A TOOTH. A large pasteboard bowl, painted the color of normal pink gums, occupies the lower fourth of the page.

(*Milk walks over to the book and pours some milk into the pink bowl.*)

Milk: I am nectar fit for the gods;
I furnish the lime for enamel rods.
The enamel rods cover your teeth,
And protect the pulp that lies underneath.
By drinking a quart of me each day
Your enamel rods can resist decay.
Dairy products, too, are fine
Because they all contain much lime.
Remember Miss Muffet who sat on a tuffet,
Eating her curds and whey?
Though she lived to be a grand old age
Her teeth never did decay.

(*Milk returns to place in line.*)

(*Whole Wheat steps to book, deposits grain and bread into bowl.*)

Whole Wheat: Down through the ages, down through the years,
I've been a friend to man:
I've clothed him and fed him and thatched his hut
Since life itself began.
Within my yellow kernel are minerals rich as gold
Which will, forsooth, make every tooth
As strong as knights of old.
So eat your whole wheat cereal
And eat your whole wheat bread
Three times a day and stop decay
So toothache you'll not dread.
You remember Simple Simon, the boy who met the pieman?
Well, Simon was not so simple as they say
For Simon told the pieman, "If your pie was made of rye, man,
I'd try it and I'd buy it every day."

(*Whole Wheat then returns to his place in the line.*)

(*Vegetables then walks up to bowl and deposits some vegetables in it.*)

Vegetables: Green leafy vegetables every day
Will help to chase decay away.
Lettuce and spinach and turnip greens,
Cabbage and onions and green beans,
Watercress and artichokes
Are very fine for little folks.
Two kinds of vegetables every day

Will guard your teeth from dread decay.

You remember Tommy Tucker who sang for his supper?
Why did he sing every day? He could tell

By the smell that he'd dine very well on a vegetable roundelay.

(*Vegetables then takes place in the line.*)

(*Fruits steps to the book and deposits some fruit in the bowl.*)

Fruits: Oranges, apples, grapefruit, and limes—
They are rich in vitamins.
Peaches, pears, pineapple, plums
All are good for teeth and gums.
Eat some fruit three times a day,
Build strong teeth and stop decay.
The little old lady who lived in a shoe
Had so many children she didn't know what to do.
She gave each an apple. Why, do you think?
It made their teeth white and made their gums pink.

(*Fruits returns to the line.*)

(*Proteins steps forward and deposits something in the bowl.*)

Proteins: A child's chief business is to grow
Strong and sturdy that we know.
Therefore a child should daily eat
A little fish or a little meat
Or else an egg or a bit of cheese
Because new tissue is built of these.
Do you remember Humpty Dumpty
Who was sitting on a wall?
He was just a-sittin' there
Doing nothing much a'tall.
Long came some horses
With the king's men
Feeling tired and down and out
Until they spied him; then
They gobbled up old Humpty
For that was what he's for;
And then they felt so strong and brave
They went out and won a war.

(*Proteins retires to place in line.*)

(*Fats steps forward and pours some fat into the bowl.*)

Fats: Vitamin D and vitamin A
Build resistance and stop decay.
Butter or nuts or good rich cream,
Suet or oleomargarine,
A spoon full of cod liver oil each day
Prevents rickets and stops decay.
I'm sure you know your A B C's;
I'm sure that I know mine;
But do you know that A B C's
Are names of vitamins?
And vitamins, they stand for health;
And health, it stands for good;
Be sure you know your vitamins
As all good children should.

(Fats retires and Mother Nature walks toward the book. Mother Nature starts mixing the contents of the bowl.)

Mother Nature: All of these foods are needed, forsooth, To build a disease-resistant tooth. Thoroughly mix and expose to the sun And one third of our job of prevention is done.

(Mother Nature steps to one side and a large tooth emerges from bowl)

(Cleanliness steps forward as tooth makes its appearance out of bowl)

Cleanliness: Just as soon as new teeth appear Clean them and thus preserve them for many a year,

For if you don't care and let them decay

Nature will naturally take them away; So clean them well with brush and paste.

Remember, you've no teeth to waste.

(Child Dentistry steps forward to the book and examines the tooth.)

Child Dentistry: Ah, how wonderful it would be

If children had no need for me.

Here is a tooth exceedingly rare:

It has no need for dental care;

Its enamel is hard and exceedingly bright;

You can see it's been cared for both morning and night.

But most school children, I'm sorry to say,

Have many bad teeth that are wasting away;

So before we close, take my advice:

See your dentist each year once or twice.

He'll remove decay in its earliest stage,

And thus save your teeth for a grand old age.

Final song, "Good Night Children" is sung by cast to the tune of "Good Night Sweetheart." Characters file one by one into the book. Boy closes book cover as last one disappears and song fades out in distance.

(CURTAIN)

AN AID IN APICOECTOMIES

Doctor William Hemley, of Brooklyn, New York, makes the following suggestion regarding the orientation of the root apex in cases of root amputation:

In those cases requiring apicoectomies in which the abscessed area does not point or destroy the buccal plate it is often difficult to open at the exact point in order to destroy as little healthy tissue as possible. The apex may seem more mesial because of the inclination of the tooth toward the median line.

For the purpose of orientation, Doctor Hemley says, he obtains excellent results by incising the mucous membrane and then placing some radiopaque substance, such as gutta-percha, on the outer plate of the alveolus at the point where he intends to open. The roentgenogram is then taken with the radiopaque material in position.

AN INK REMOVER AND A STERILIZER

Doctor C. Frank Tuma, of Cleveland, Ohio, suggests the use of Zonite, full strength, for a good ink remover.

Doctor Tuma also sends in the following suggestion from Steven's *Modern Materia Medica*:

An excellent method of sterilizing small instruments without dulling or tarnishing them is to expose them for ten minutes in an air-tight tin box to the vapor evolved from a 5 grain (0.3 g.) Paraform tablet.

REFLECTED DENTAL PAIN

Arthur Amies, L.R.C.P., L.D.S., D.D.Sc., writing in the *Australian Journal of Dentistry*¹ explains pain in the arm and spasms in the pectoralis major muscle which is occasionally associated with dental disease by the following anatomic facts:

1. The nerve fibers from the gas-serian ganglion enter the pons and some end there. But a large proportion descend in the medulla and cord and reach as far as the second cervical segment. The fibers ending in the pons are those conveying tactile sensations from the face, whereas those going down into the spinal cord convey sensations of pain, heat, and cold. The latter are apparently the ones associated with pain in the arm.

2. The nerve supply of the brachial artery is a twig from the musculocutaneous nerve from the fifth and sixth cervical segments. These segments also supply the pectoralis major muscle.

3. Sensory nuclei of the fifth nerve are connected by association fibers with the seventh and twelfth motor nuclei for face and tongue reflexes, and probably also with the motor nuclei of the brachial plexus (Keiller).

Doctor Harry W. Hicks, of Boston, Massachusetts, sends in the following suggestion:

The use of straight alcohol to wipe out a cavity before filling it will in a great many cases cause the tooth to ache severely. A solution of one-third chloroform and two-thirds alcohol will overcome this objection.

¹Vol. 36, p. 51, February, 1932.

SOME PRACTICAL SUGGESTIONS

REMOVAL OF MODELING COMPOUND FROM IMPRESSION TRAYS

1. Dear Miss Grey: In regard to the request from one of your readers for a chemical solution that will dissolve modeling compound from impression trays, I submit the following: caustic soda (sodium hydroxide), 2 parts; water, 16 parts; liquid paraffin, 4 parts. Place trays in this solution in a large pan (agate ware or enamel); bring to a boil; remove and scrub under the water tap. Be sure to use a large pan as the solution may froth up. Set solution aside; it will not deteriorate and can be used many times. Loss by vaporization can be made up with water to the original volume. Keep covered to keep clean. S. O. S. Magic Scouring Pads may also be used for cleaning and brightening trays.

Earl G. Grahn, D.D.S.

2. Dear Miss Grey: In reply to the question about the removal of modeling compound from trays: Place trays in a pan; cover with gasoline; let stand for twenty-four hours; then, they can be wiped off easily. Be sure to keep away from fire.

Ethel Reeves, D.H.

3. The following suggestion has also been submitted:

Boil trays in a solution of sal soda and water. Sal soda will dissolve or destroy aluminum trays; hence, they must be closely watched. Chloroform will remove compound from trays, and kerosene also, but they are not recommended because of the odor.

FOCAL INFECTION AND ITS RELATION TO ARTHRITIS*

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THE term arthritis is confusing. But so is rheumatism, the popular name for the same disease. It is exceedingly difficult at times, if not impossible, for medical science to select a nomenclature that can fully explain to the lay mind the nature and ramifications of the disease in question. Names in medicine should give some information as to the event or sequence of events brought about by an ailment. Unfortunately, many a disease was labeled before its cause had been discovered. Often, after an individual organism had been designated as the origin of the disease, the name chosen for it connected the events produced with this individual organism. But when it was found that a group of organisms could be responsible for the same symptoms and the same events, it was obviously impossible to describe this condition with the accepted name.

Medicine has been in the habit of using the terms arthritis and rheumatic fever interchangeably for years. The textbook definition is: "A constitutional disease marked by inflammation of the connective tissue of the body." The definition was applied before bacteriology had become an accepted science. Since then, in the desire to be explicit, bacteria having been considered as the causative agents, the issue was confused still more for the layman by adding "itis" to the name of each inflamed anatomic structure in order to designate the individual disease. Should the skin become inflamed the condition is called dermatitis; if the muscle is affected, myositis; the nerves, neuritis; the tendon, tenonitis; the cartilage, chondritis; and the joint, arthritis. All these various ailments with their many symptoms and manifestations are collected under the one general term, arthritis, and the public is expected to grasp its meaning.

Arthritis may be caused by many organisms, although the most common causative agent of this disease is the streptococcus. But the term strepto-

coccus designates a group of organisms; therefore, when it is named as being responsible for a disease, the statement is not very definite. When the physician is in doubt about the nature of the etiologic factor, he usually resorts to the term infection.

Organisms act in a mysterious, puzzling way. This should be kept in mind in order to understand the difficulty in naming the cause of a sequence of events which may last for months or years. Organisms act the same as certain families of animals do. Different members of the same animal family will exhibit distinctly different habits. Then why should different members of the same family of organisms behave identically? In the rodent family, for example, the squirrel runs up a tree and a rat into a hole in the ground. The strange mannerisms of familiar animals are taken for granted, but the erratic behavior of microscopic organisms is subject to theorizing without taking into consideration that their study is far more difficult than that of animals visible to the naked eye. Usually, an obscure name is given and this seems to satisfy the majority of us in the hasty endeavor to solve the problem.

Some infectious diseases have their beginning with a focus of infection. A focus of infection is "an area of tissue infected with disease-causing organisms." When the words focus and focal were first given to the medical profession, they carried with them the idea of a pocket of pus. This pocket was, of course, located within the person and the current belief was that the patient's only chance to be cured of the disease was to have the pocket of pus removed. This has been a common procedure when dealing with arthritis.

A few arthritic patients have been cured by having the pus-producing organisms removed by surgical measures. Unfortunately, only a small percentage of the cases of arthritis are caused by pus-producing organisms. Arthritis is a chronic disorder. Chronic conditions are difficult to treat in any event. But the cure of

arthritis is made more difficult by the short-cuts offered patients who are naturally eager to be freed of disease. Most of the so-called cures offered to the arthritic patient are a challenge to his courage. The treatments are mutilating. Many different organs, such as the teeth, tonsils, gallbladder, appendix, uterus, tubes, and ovaries, may be involved; and, therefore, the disease can be attributed to various causes. Many patients have been benefited by the removal of one or more of the organs mentioned. But in many others, the disease remains as persistent as ever after the specialist removes the organ he is particularly qualified to remove.

Usually, the operating specialist plays no part in the later treatment of the disease. He is either inexperienced or not interested in treating the disease itself. When several specialists are employed, each functioning in his limited field, there is apparent an absence of coordinated effort. The wreckage is correspondingly increased; thus, with the presence of many specialists there is an absence of coordination and a great deal of harm is done. The dentists are in a fortunate position; that is, they can repair some of the injury.

There is no denying the fact that people have been restored to health by submitting to operations. The point is that the mechanical procedures and the men trained to do them are far more numerous than the diagnosticians who decide when and where these procedures are indicated. If for each specialist trained to perform these mechanical procedures ten men would be trained to decide when the work is indicated, dentistry and medicine would undoubtedly be applied to better advantage and the amount of harm done would be lessened.

What is being done about this human wreckage? What specialists are being trained to care for it? Who is willing to go through the preparatory course to fit himself for this work? Who will devote himself to the task of teaching these partly incapacitated human beings how to adjust or read-

*Presented before the Chicago Dental Society, Midwinter Meeting, Section on Oral Surgery, January 19, 1932.

just themselves so that they may function efficiently?

The three most common chronic disorders attacking mankind today are tuberculosis, syphilis, and arthritis. All three of them were described and classified in our medical literature many years before the organisms causing them were discovered. Because these diseases behave so similarly and show so many similar symptoms, and because any two of the three diseases can and will occur at the same time in the same person, they are often mistaken for each other.

Tuberculosis, like arthritis and syphilis, is a chronic disorder. We have gradually come to understand that about all the general profession can contribute is the diagnosis. The earlier the diagnosis is made, the better the prospects for the patient. But it took many years to find out that the various specialists had little to offer the chronic sufferer. The greatest lesson to learn was not to overtreat the patient. It was discovered that rest in bed was the proper treatment. The patient no longer, as a rule, goes from surgeon to surgeon, trying to have the infection cut out by having the teeth, the gallbladder, or the appendix removed. There are some tuberculous patients with abscessed teeth and diseased gallbladders. But the physician has become conservative. He is inclined to overlook these associated disorders. He tries rather to restore to such a patient a different kind of health with which to combat tuberculosis. Many persons have recovered from tuberculosis despite diseased tonsils and pulpless teeth.

Not many years ago the focus of infection in syphilis was supposed to be the chancre; therefore, it was cauterized and burned out. If the treatment of syphilis were limited to the removal or amputation of the first lesion to appear, this disease would be of little consequence. But it is common knowledge today that by the time the chancre appears, the organism responsible for this disease can be found in the walls of the blood vessels throughout the body.

Let me repeat that in both tuberculosis and syphilis the hardest lesson to learn was not to overtreat the patient. This is also true of arthritis. The medical profession learned, after years of mistakes, that it met with dismal failure when it attempted to cure both syphilis and tuberculosis through the removal of the focus of infection. Again, the same is true of arthritis. There are times when this procedure works like magic. But a few spectacular successes are mislead-

ing. When the risks are so great, it is well to *know* when it is safe to operate and when the results will be disastrous. Few patients have been cured of arthritis by the extraction of all their teeth. I have had ample opportunity of meeting many who have made this sacrifice in vain, while some have been materially benefited.

Why then does the arthritic patient still submit to operations? No doubt for the reason that he is still to be found near the springs and mud baths. He is always going somewhere, trying everything, following any kind of advice. What syphilitic or tuberculous patient asks advice of anyone but the physician today? Not long ago such patients went freely about to many climates and springs to have the disease boiled out of them. Again, history repeats itself. Arthritic patients follow the same road today. The Law began to move against tuberculosis and Public Opinion against syphilis. The Law moved because tuberculosis is a communicable disease, and Public Opinion ostracizes the syphilitic person as one to be shunned and scorned. Tuberculosis and syphilis became problems for local jurisdiction. How many years will it be until this is the case with arthritis? Today most physicians who treat tuberculosis or syphilis find it necessary to devote their entire time to these chronic cases. But not so in the case of arthritis. And tuberculosis is not so cruel as arthritis. The tuberculous patient in an extreme stage, even with death close at hand, is quiet and peaceful. He gives little trouble to the one who goes to his aid. Even syphilis is kinder than arthritis. The factor of pain does not disturb the patient so often. At times the disease attacks even the brain and dulls the senses so that the patient does not realize his plight and loses all measure of responsibility.

Cruel as arthritis is, few of its victims lose their senses. Through the developing stages and the tormenting stages, the patient is still able to get around and is strong enough to go from physician to physician—strong enough to travel through his own and other countries in search of help. He never surrenders until poverty has overtaken him and he has no more money with which to fight the enemy. And only then does he become a local problem. It is difficult to advise the patients with this chronic disturbance in the early, acute stages of the disease. The cure does not lie around the corner and this violent manipulation or that particular operation will not restore them to health and usefulness in a few hours or a few days.

The treatment is a long, drawn-out process, requiring much patience, a difficult problem for which the optimistic surgeon is equipped neither by inclination nor training. It is necessary for the physician to observe these patients for years in order to study and understand the course of the disease. He has been baffled and disappointed many times when he expected the same disease to behave in the same way with every patient. But why should he expect constant behavior? The other two diseases mentioned are each caused by a single destructive organism and the variations arise because of the point or points attacked and because of differences in individuals. There are many different kinds of streptococci, and, in the case of arthritis, the clinical variations arise because of the varying characteristics of the organisms.

It is difficult to give a clear-cut picture of the many complicated problems arthritis presents. First of all, there is the close study of the streptococcus, the organism that is the common cause of this disease. Unfortunately, the streptococcus also causes numerous other diseases, such as erysipelas and scarlet fever. The early manifestations of some of these ailments strongly resemble the symptoms of tuberculosis or syphilis.

The many different kinds of streptococci are capable of manifesting themselves in many different ways. They produce various lesions throughout the body. They attack various organs; they behave in about the same way a man behaves in that a man will behave in a different way when he is alone and when he is with his fellows. A man's behavior as a solitary creature is different from his gregarious behavior. And so it is when each type of these various organisms is numerous. The patient is devastated by the multiplicity of streptococci which can and do deform extremities and alter vital organs, and then numerous specialists attempt to restore the arthritic patient to usefulness and health by resorting to manipulations peculiar to the limited field of each. The man is to be envied who can so concentrate his work that the extraction of teeth or the removal of tonsils discharges his duty to the patient. If the dentist or nose and throat specialist had to live with the patient, if he could know and see the injury done to the heart, kidneys, and other organs, his conscience might not allow him to function so many times with so little regard for what might follow his simple operation.

The accompanying illustrations show how rapidly destruction may

strike after the removal of an infected organ or tooth.

It is known that streptococci originating in a tooth will at times behave in the same manner as the organisms spreading from an infected tonsil. These two types of streptococci can be present at the same time, causing symptoms that at first glance seem trivial or similar and yet each kind requires a specific treatment. That is the great difference between tuberculosis and syphilis on the one hand and arthritis on the other. The name syphilis denotes an individual organism. The name tuberculosis denotes an individual organism. But the name arthritis is descriptive of a numerous family of organisms. And of this family each individual organism has its own characteristics. Any one or a group of them may be the active agent or agents of the disease. In order to be able to select the proper reacting organism, for intelligent use in diagnosis and treatment, the physician must have access to a well equipped laboratory where in pure culture he can keep the various organisms liable to cause the disease.

When physicians give the arthritic patient advice what they tell him does not really apply to the individual patient. It applies to many hundreds of these patients. Physicians merely voice their experience in medicine. They offer to the individual patient a procedure that has been successfully demonstrated as of beneficial help in a large number of similar cases. This should be true of the advice given by the dentist to his patients. When a dentist disturbs teeth to correct disease, he does so, not because he is certain of helping the patient, but because he knows the suggested treatment has helped many others.

When a hundred arthritic patients are treated, an important factor to consider is what percentage can be restored to usefulness and happiness. A simple manipulation or a particular procedure will help a certain percentage, and this percentage must be large enough to justify the procedure offered the patient; otherwise, it is little more than guesswork and experimentation.

These statements do not refer to the general practice of the dentist; they do not refer to the 90 per cent who come to his office in the routine of the day. They apply to the 10 per cent of his patients that are sent to him by a physician for his help in the correction of disease. I obtained this information through a questionnaire

that was sent to every practicing dentist in Chicago. This 10 per cent is worthy of consideration.

According to the questionnaire there exists a growing tendency among the dentists to consult with a physician in isolated cases. To be exact, four patients out of every thousand are requested by the dentist to go to a physician for diagnosis before he will start any procedure. If this precaution were extended to the entire 10 per cent in question, the coordinated effort of the medical and dental professions should prove of incalculable value to the patient with arthritis or other infectious ailments.

The questionnaire showed that the dentists of Chicago have a greater percentage of natural teeth than the physicians; the laity lags far behind both of them and the arthritic patients are far behind the general public. A few statistics may prove of interest. The information was assorted in accordance with the various decades of life, from the ages of 20 to 30 up to the ages of 70 to 80. During the first period the dentists average 91.27 per cent; the physicians, 89.1 per cent; the laity, 79.1 per cent; and the arthritic patients, 59.3 per cent. During the last period the dentists average 53.46 per cent; the physicians, 51 per cent; the laity, 36 per cent; and the arthritic patients, 8.2 per cent.

These statistics are no doubt indicative of existing conditions all over the country. There are few dentists among my patients in the practice of treating infectious diseases, far less in number than physicians, not to speak of the laity or the arthritic patients. It is obvious that good dentistry is of primary importance in preventive medicine.

Arthritis is one of the most common diseases in which the teeth are suggested as the etiologic factor. In the majority of cases the infected teeth are discovered by the routine examination. If this is the case, what should the procedure be?

According to standard medical textbooks arthritis can be caused by many kinds of organisms, and this has been proved beyond a doubt by bacteriologic study.

Some arthritic patients have been permanently cured by the removal of abscessed teeth. Others have been temporarily or permanently improved. But some have been temporarily made worse or even permanently crippled by the removal of these teeth.

Should the dentist be confronted with this problem about his own teeth, he would no doubt insist on the following information before he would allow his teeth to be disturbed:

1. How long had the arthritis been present before the abscessed teeth were discovered?
2. Were these abscesses silent ones, discovered by the roentgenogram; or were the teeth disturbing the patient and causing symptoms that brought him to the dentist?
3. What joints were involved, the large joints or the small ones?
4. Was the pain in the joints present only on motion or also when the joints were quiet?
5. Were the small joints swollen and the large joints free from swelling, redness, heat, and tenderness on pressure?
6. What was the condition of the blood?
7. Was the patient anemic?
8. Did he have 100 per cent hemoglobin, 90 per cent, 80 per cent, or 70 per cent?
9. Did he have 5,000,000 red cells, 4,000,000, or 3,000,000?
10. How many leukocytes were present?
11. Did a rise in temperature exist? If so, how long had it been present?
12. Was the urine free from sugar and was the blood sugar normal, especially in patients around the age of 50?
13. What was the blood pressure?

Where infection is present, the few simple, precautionary tests, necessary for the patient's protection as well as the operating dentist's protection, can be obtained in a short time by the average office assistant or nurse. The time required for the tests is as follows: red blood count, eight minutes; white blood count, four minutes; differential count, from twelve to fifteen minutes; hemoglobin determination, two minutes; temperature, two minutes.

(to page 254)



Fig. 1



Fig. 2

Fig. 1—Before removal of tooth.

Fig. 2—Same patient as in Fig. 1, two days later; permanently blind.



Fig. 3



Fig. 4

Fig. 3—Before removal of tooth.

Fig. 4—Same patient as in Fig. 3, dying of endocarditis which appeared four days after removal of tooth. Petechial hemorrhages, positive blood culture, and rapid clubbing of fingers were present.



Fig. 5



Fig. 6



Fig. 7

Fig. 5—Removal of tooth caused rapid destruction of eyes.

Fig. 6—Another patient in whom removal of teeth caused rapid destruction of eye.

Fig. 7—Tooth extraction caused rapid destruction of eye.

Certain facts about the previous health of the patient should also be obtained:

1. Is this the first time the patient has had this condition? It must be borne in mind that arthritis is one of the most common conditions that has a tendency to recur.
2. If the patient has had previous ill health during his adult life, what were the diseases?
3. Is there a history of an impaired or infected heart, or acutely or chronically involved kidneys?
4. Has the patient had tuberculosis or syphilis, recently or some time ago?
5. Is this the first time the teeth have ever been suggested as the cause of ill health? If they have previously been disturbed and previous abscesses were removed, what effect did this procedure have on the disease at the time? Was the disease made worse or temporarily improved?
6. If the condition has recurred, what interval followed the preceding attack, months or years?
7. Has the patient ever had diabetes?
8. What is the age of the patient?
9. Is he at a time of life when one can reasonably assume that other organs of his body are going through the same changes as the teeth?

These questions should give a fair history of the patient. A few hours spent with the patient in order to get better acquainted with him and the condition of his health may save him years of suffering.

Should the dental surgeon not be equipped to spend the time necessary for the laboratory work, he certainly would be justified in requesting the physician who referred the patient to him to furnish him with this information before he assumes any responsibility by entering into a procedure without having the protection to which he is entitled. When he enters the field of medicine and does a destructive procedure which may be the beginning of chronic invalidism he should be acquainted with the possible hazards. This is one of the reasons why the dental and medical professions cannot be separated. The tragic result of the division of their respon-

sibilities can be observed in hundreds of cases. The dentist and the physician should cooperate at all times.

It has taken years to give both the patient and the surgeon these protections when tonsils were removed. The same kind of harm and the same difficulties that are liable to follow the extraction of teeth may follow a tonsillectomy. In class A hospitals, physicians are prohibited from performing tonsillectomies until after a physical examination has been made and the temperature, the blood count, and the clotting time of the blood have been recorded.

When technical procedures are instituted to relieve the patient, the utmost protection should be accorded both patient and operating surgeon. No one performs more careful, meticulous work before entering into a procedure than the physician about to do a blood transfusion. Why? A blood transfusion does not require as much skill and training as the extraction of a tooth. But in one procedure the reaction is prompt, immediate, while the effect of the other is a matter of conjecture. There is no escape from criticism for the operator who does the transfusion. In most instances, when the dentist extracts teeth he is saved from immediate embarrassment. The fuse he has lighted is a long one and the explosion may not take place for a week, a month, or even several months. It is because of this delayed reaction that it is possible for him to proceed with this simple operation without the necessary preparations to safeguard the patient and himself from the events that may follow. Logically, the operating dentist should be just as careful as the physician performing a blood transfusion. It is a mistake of his to disturb teeth solely at the suggestion of a physician without insisting on the necessary data to protect himself.

The opinions of authorities regarding the benefits following the removal of infected teeth, devitalized teeth, and the so-called dead teeth are conflicting. Standard textbooks used in the medical schools bring such statements: "The removal of infected, devitalized and dead teeth is still a mooted question," and "Remove all infected, devitalized and dead teeth." It is surely a mooted question when no concerted opinion can be found.

Because of the extensive literature of both the medical and dental professions, dentists are, in most cases, not familiar with the former; therefore, they often find themselves in a quandary as to how to proceed, not having ready references at hand to support their judgment, and accept

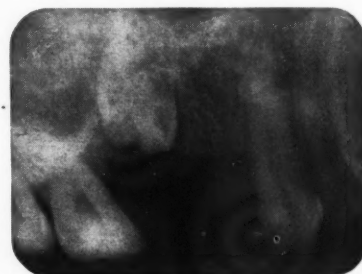
the word of an individual physician as authoritative and act on his opinion.

While the organisms responsible for the different diseases may or may not be known today, their portal of entry is as mysterious as ever. The mere mention of teeth as one of many possible sources of disease has been pounced upon and interpreted by a certain type of specialist, who, using this authority in his own way, advises as a cure the removal of teeth when treating infectious diseases; while the textbook, no doubt, means to convey to the student the fact that this procedure will provide the patient with better health, and consequently greater resistance to combat the disease. It is the responsibility and opportunity of the dental profession to extend this kind of health service to arthritic patients and to the public generally.

REPORT OF CASE OF SUBMERGED TOOTH

Doctor Charles R. Hocker, D.D.S., of Ponca City, Oklahoma, reports the following case:

The patient, a woman, aged 25, had the upper left second bicuspid extracted about eight months before my examination was made. Three days later, the first bicuspid was removed



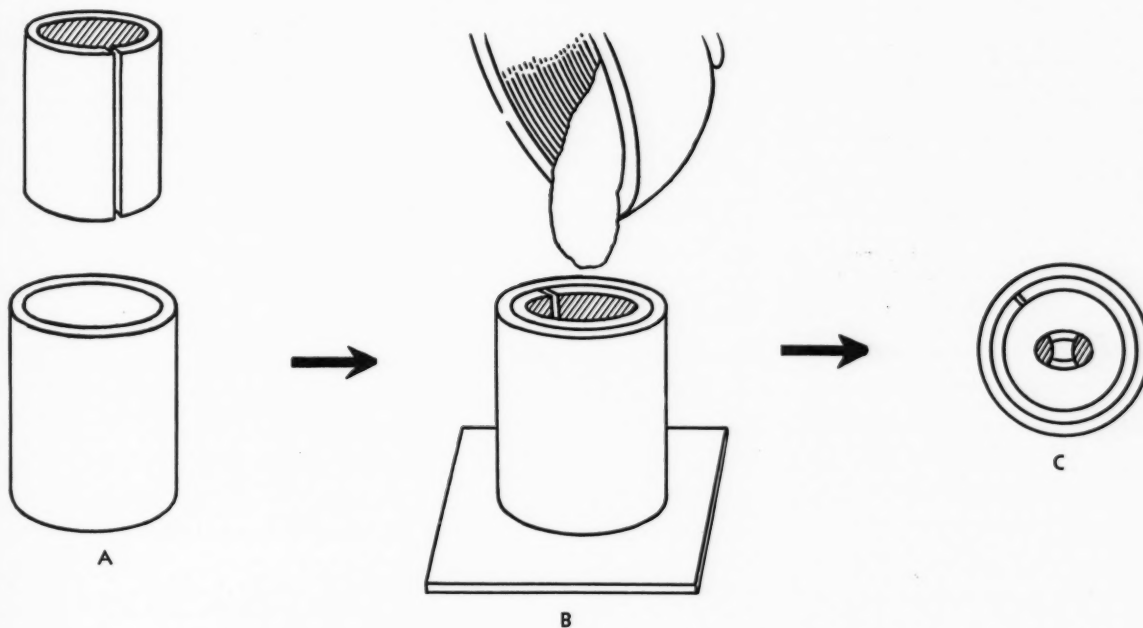
Roentgenogram showing submerged tooth.

because, as the patient said, "it had been loosened during the previous extraction." Then followed a period of rare surgery in which the bone was scraped at least twenty-five times "to remove some dead bone," as the patient explained. Finally, the patient changed dentists.

Examination revealed pus flowing from a rather large opening, little soreness and little swelling. The roentgenogram showed a submerged tooth which was removed under novocain anesthesia. As was expected, the opening penetrated into the antrum. A small flap was required to close the opening. The patient is now getting along well.

SHEET RUBBER LABORATORY AIDS

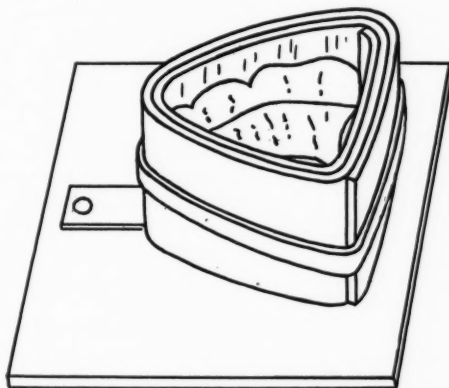
C. Frank Tuma, D.D.S., of Cleveland, makes the following suggestions:



1. A, A piece of rubber, cut to size, from an automobile inner tube, is coiled and inserted in an ordinary inlay casting ring as a lining. B, It is set on a rubber square and filled with plaster of Paris. C, The inlay impression, in modeling compound used in the indirect technique, is pressed to place, allowed to set, and the die is packed. The entire mass is easily removed from the ring.



2. A rubber boxing strip may be made from an automobile inner tube. (a) Four strips are cut, each 22 inches long and in assorted widths, varying from 1 inch to $1\frac{3}{4}$. (b) The impression is reinforced by setting it in a pile or base of plaster. The impression is trimmed when set. (c) A strip of suitable size is selected and wound around the impression, beginning at one heel, and bound with a heavy rubber band. (d) The rubber box is packed with model stone.



3. Six inch squares of rubber are useful to pour plaster of Paris on when reinforcing impressions for boxing, and in mounting casts on articulators.

LETTERS

The more I read THE DENTAL DIGEST, the better I like it. The more I see it, the more I admire it. It's unique in its make-up. Lots of success to you!—M. ROTHENBERG, D.D.S., *Brooklyn, N. Y.*

Best publication in the field. Keep it up!—STANLEY C. BROWN, D.D.S., *Ithaca, Mich.*

It has just been my good fortune this evening to peruse the finest dental magazine it has ever been my pleasure to look upon. Your new creation is artistic in the truest sense of the word; the illustrations are beautiful; the whole magazine is a tribute to your herculean efforts to produce something different. In this you have succeeded admirably. There is not one uninteresting feature in the whole book. May I add my tribute to all those tributes that you have received since the first copy was issued?

THE DENTAL DIGEST as it comes to the profession today is a distinct credit to dental journalism. Will you please accept my sincerest congratulations for the excellent work you are doing in our cause to promote better and healthier periodicals in the profession of dentistry?—V. H. NILSSON, D.D.S., *Minneapolis*

The dental profession certainly owes you endless homage for your great innovation, the new DENTAL DIGEST. It lends dignity to our honored profession, of which we are all proud. Its presence is a joy forever, and its able monthly messages help us keep step with the progress of our rapidly advancing brothers who are marching in the front ranks. We owe much gratitude to them. They search and find and give us the fruits of their labors through the medium of THE DENTAL DIGEST, the new gift to our respected profession. For many years it has served and in the years that are before us it will help us on that "rough and rugged journey of human life."—LOUIS M. DAUM, D.D.S., *Los Angeles*

My first reaction to the new DENTAL DIGEST is *utter disgust*. Are you trying to play up to the advertisers for which, perhaps, I can't blame you, or are you, as I thought you might be, giving the dentists, *your readers*, a better paper? I am not writing to you merely as a dentist but also as a publisher who has had more than twenty years' experience in the trade paper publishing field.

What is that big catty looking splosh "DENTAL DIGEST" on the front cover? The letters stand before my eyes like so many demons—evasive and unintelligible! This was confirmed by several patients whom I was curious enough to ask what their reaction was. They had to stick their noses right up against the cover to understand it, but this is of minor importance.

Don't you think dentists have to strain their eyes enough during the day, without having to burn the lights out of them in reading that solid, small type, three-column stuff on *coated* paper which alone is blurring and glaring to the eyes? Compare this with the old DIGEST which it was really a pleasure for me to read, as it no doubt was to thousands of others. The type was clear and leaded and no strain on the eyes whatsoever; and again why that unearthly size, inconvenient and impractical, especially in a dental publication?

After a survey of the table of contents, I anticipated proceeding further into the periodical, but I must confess that the

moment the type struck my eyes I put it down with disgust and mortification. My desire to read it was simply squelched.

To sum up from the publisher's standpoint: It impressed me as being merely a bid for commercial expansion, certainly not educational or ethical. What dentists want is unembellished facts and knowledge, simply told, in readable fashion. Perhaps a closer analysis of the publication would elicit from me more criticism, but I shall let the above suffice, which, I assure you, I am extending to you in the utmost sincerity.—R. MAURICE SHARLACH, D.D.S., *White Plains, N. Y.*

After many others I want to congratulate you. THE DENTAL DIGEST is very interesting and profitable even to the six hundred French-speaking dentists of this province of Quebec and of Canada. I know that your magazine is enjoyed and always welcome in French-Canadian dental offices. I feel that you can render us valuable service. I wish you great success. THE DENTAL DIGEST is a beautiful and useful dental publication.—MASSUE MONAT, L.D.S., *Montreal*

Allow me to congratulate you on your very fine publication. It seems to improve with each issue. The simple, original, thorough presentation of each topic, so essential to the general practitioner, makes the magazine distinctive in the field of dental journalism. It certainly is a credit to the House of Ryan, and I wish you great success and good health to carry on for many years.—EDWARD M. RYAN, D.M.D., *Amherst, Mass.*

May I compliment you on the fine character of your issues?—SIDNEY KABEL, D.D.S., *Upper Darby, Pa.*

The new DENTAL DIGEST has proved a revelation in unique style of presentation and has elicited most favorable comment. You are to be congratulated upon offering to the dental profession such a splendid medium of information.—RAOUL H. BLANQUIE, D.D.S., *San Francisco*

THE DENTAL DIGEST is truly a modern dental journal. Its matter is practical and well presented; its illustrations are simply artistic, and the entire magazine is very inviting. It is a real step forward in dental journalism.—DAVID B. PASCHEN, D.D.S., *Milwaukee*

Your new publication, THE DENTAL DIGEST, has created something new in the way of illustrations which help materially in understanding a scientific article. The material has been of a very high type. Permit me to congratulate you and all concerned on this fine magazine.—PAUL J. AUFDERHEIDE, D.D.S., *Cleveland*

You have done a wonderful job on the new DIGEST. It is a joy.—CLAUDE LONGENECKER, D.D.S., *Worthington, Ohio*

I want to congratulate you on THE DENTAL DIGEST. It is one hundred per cent in every way. I wish you the best of success.—E. S. TEMPLE, D.D.S., *Springfield, Mass.*

Words cannot express my surprise on opening the new DENTAL DIGEST, and finding it to be the best dental magazine I have seen in quite some time. I would like to compliment the editor and his entire staff on producing this wonderful piece of

work. I hope it will continue to improve and retain its place among the leading magazines of the profession.—WILLIAM J. FUCHS, D.D.S., *Brooklyn, N. Y.*

I am enclosing my check for my annual subscription which, I must say, is much too small an amount for what I consider the best dental journal obtainable today.—ANDREW R. WHITLEY, D.D.S., *New Orleans*

The new DENTAL DIGEST should appeal to every reader of dental literature. I like the new size, appearance, and impressive reading matter. You are to be congratulated.—L. L. BAKER, D.D.S., *Eugene, Oregon*

I have intended writing you before this to tell you how much we enjoyed the new DENTAL DIGEST, but I have neglected doing so. Therefore, I want to take this opportunity to express to you and your associates our keen appreciation of the new DIGEST.—JOHN W. RICHMOND, D.D.S., *Kansas City, Kansas*

I am very proud indeed to endorse your efforts in producing such a well organized magazine.—D. A. HAGERMAN, D.D.S., *Houston, Texas*

The new DENTAL DIGEST as published now so far outshines anything published that you certainly should be proud of your accomplishments. Your articles are interesting and to the point and the beautiful illustrations must be commented upon.—ARTHUR MARCUS, D.D.S., *New York*

Many thanks for the copies of the February, March, and April issues of THE DENTAL DIGEST. I do not know of a room in the elementary grades of the McLean school that has not read "The Cave People" and "The Twins" and commented on them.

Best wishes for the success of your magazine.—ANTOINETTE AHSCHIER, *Itinerant Public Health Nurse, A.R.C., McLean, Texas*

Allow me to congratulate you on the new DENTAL DIGEST. It is quite an innovation as a publication for the advancement of dental science.—LEROY MOUNT RIEGER, D.D.S., *New York*

THE DENTAL DIGEST is the book we have been in need of for a long time. I have taken the old one for years, but the new is so much better.—L. H. ANDERSON, D.D.S., *Pocatello, Idaho*

I have received my third issue of your worthy magazine and have enjoyed reading it from cover to cover. Your publication is to be commended! Each article hits the "bull's-eye."—M. S. SACKS, D.D.S., *New York*

May I, at this time, congratulate you on your new change of policy? I have been a contributor to your journal for a number of years and have enjoyed the new idea most thoroughly.—SIDNEY SORRIN, D.D.S., *Assistant Professor of Periodontia, New York University, New York*

Allow me to commend you upon the very fine publication, which you have produced. I am, indeed, grateful for the opportunity to acquaint myself with the select knowledge which this book contributes to the dental profession.—MORRIS L. LASSMAN, *Brooklyn, New York*

DENTAL ASSISTANTS AND SECRETARIES

ELSIE GREY

Have you a particular method, or have you a time saving short-cut that lightens the work or makes for greater efficiency in the office? You may help many who are beginners—and you know how you needed help during your first few months in a dental office. Perhaps you need help now. Write to Elsie Grey—she will help you.

QUESTION—I find it hard to keep busy at the office. I do my work just as I am supposed to, but still find so much spare time. Will you kindly tell me the best way to ask patients to pay something on account?

ANSWER—Your letter is interesting because I have never known any dental assistants with a surplus of time on their hands during office hours. If you assist the dentist at the chair; mix all the cements, synthetic porcelains, and amalgams; prepare the waxes, gutta-percha, plaster, mouth washes, and cleaning solutions; make all the appointments; answer the telephone; interview all callers; keep the office free from dust, the nickel polished and the instruments and equipment polished and sterilized—then, I cannot see when you can have a minute to spare. However, some of the things that can be done in spare moments are: (1) the cleaning of cabinets, files, desk drawers, supply closets, laboratory bench, shelves, and equipment; (2) helping in the laboratory: pouring models, boxing impressions, investing inlays and casting, and packing amalgam dies; (3) preparing surgical dressings, applicators, sponges, and swabs; filling containers with cleaning materials for prophylaxis; keeping medicament containers in order; (4) desk work, such as making out bills; sending out appointment cards and recall cards; sorting and filing records, charts, correspondence, and x-rays; (5) developing x-rays, mounting, and indexing; keeping x-ray solutions and materials in order, and the equipment in a dark room.

The best way to approach patients for a payment on account depends entirely on the arrangements made by

your employer with his patients. It is generally agreed that all financial arrangements with the patients should be made at the first sitting at which the service to be rendered is planned and decided. If your employer leaves all financial details to you, then you should have an understanding with the patient at the time you make the appointment for the next sitting, after having consulted with the dentist as to the approximate cost of the work.

Many offices require an initial payment or deposit, and, depending on the type of work to be done, this may vary in amount. About one third of the total cost is considered a fair percentage; then, you can arrange for the patient to pay so much a week, or semimonthly, or at each appointment. This will make it simple for you to say, "I have your receipt ready, Mrs. Jones, for the payment that is due today on your work." If no arrangement has been made with the patients and the dentist wants you to ask for the money, you can say, "Mrs. Jones, I neglected to ask you just how you wished to pay for your work. Is it agreeable for you to give me something on account today? It would be appreciated."

On the patient's reaction to your suggestion will depend further procedure; there can be no set rule outlined. You might say, "Mrs. Black, to date the services rendered amount to . . . Would it be convenient for you to make a payment on account?" What your method of approach can be must depend on the type of patients that come to your office. All offices cannot follow the same procedure, and, correspondingly, all patients must be handled differently.

We will be glad to try to find a solution for any specific problem but cannot give a blanket procedure in matters in which the human equation plays such a big part.

QUESTION—What shall I do with the bits of used wax that accumulate in the laboratory?

ANSWER—Place the bits of wax in a pan with several inches of water;

bring to a boil; skim off the floating particles, and while warm, take a bottle or glass and dip it into the melted wax. A thin coating will result. Allow to cool, and redip as often as desired for thickness. With a sharp knife, cut lengthwise and peel the wax off the glass. Lay the strips of wax in a box between layers of waxed paper.

QUESTION—I have just started to work in a dental office and am alone in the office during the forenoon at which time I am supposed to keep the office in order and answer the telephone. There is one thing that bothers me. When I get a telephone call or someone comes into the office and asks to speak to the doctor, and I say that he is not in, the usual reply is, "Thank you. Good-bye." What shall I do? Shall I ask them if they wish appointments?

ANSWER—When answering the 'phone you might say, "Good morning. Doctor Blank's office. Miss Jones speaking." If the reply is, "Is Doctor Blank in?" you can say, "May I know who is asking for Doctor Blank? Is it a personal call, or do you desire an appointment?" Should the reply be, "I want to talk to the doctor personally," you may say, "I am sorry but the doctor is out of the office just now; please give me your telephone number and your name, and I will call you just as soon as the doctor returns." If it is for an appointment, then say, "I am sorry that the doctor cannot come to the telephone just now, but I will arrange an appointment for you" and proceed to do so.

Where personal callers to the office are concerned, your procedure should be the same: a pleasant greeting, ascertain the business of the caller, then respond accordingly. Take the caller's name and address or telephone number and get a brief explanation of his business with the doctor for the doctor's information and decision as to whether he should be communicated with or not.

If it is a patient who desires an appointment, then arrange it with him. If you maintain a pleasant, dignified manner, you can become a valuable asset to your employer during his absence in your interviews with telephone or personal callers. Much depends upon your manner of approach. There is nothing to be fearful about, or embarrassed. You are the doctor's representative when he is absent, and the business of the office is your responsibility.

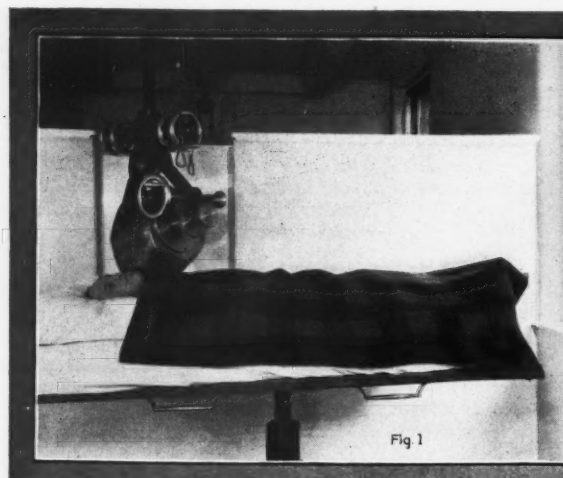


Fig. 1—Patient being irradiated with the large 4 g. pack. Note thickness of metal surrounding radium. This pack is contained in a lead-filled brass head.

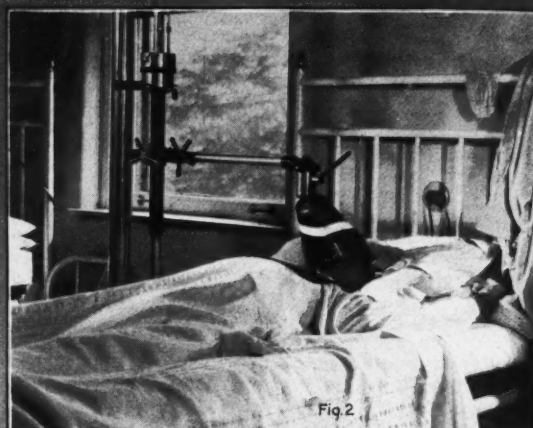


Fig. 2—A pack in use in a case of an oral malignant condition. Note leaded rubber covering face for protection purposes.

RADIUM AND SOME OF ITS CHARACTERISTICS

HAROLD ARTHUR SOLOMON, D.D.S.
Buffalo, New York

RADIOACTIVITY was discovered in 1896 by M. Henri Becquerel of Paris. Becquerel was experimenting with substances that had sufficient radioactivity to register on photographic plates covered with black paper. For this purpose he used materials that had the power of absorbing energy from sunlight and of emitting it in the form of light radiation, or phosphorescence.

Development of a photographic film which had been accidentally irradiated with uranium in a desk drawer showed that the film had been blackened, while upon the blackened film was the image of a key that had been lying on the film. This result indicated the passage of energy in the form of so-called rays or waves.

Becquerel immediately gathered the impression that he had discovered a heretofore unknown ray, which, of course, was correct. He then consulted his friends Professor and Mme. Curie in an effort to isolate the active element in the uranium. In the meantime, Professor Curie met his most untimely death by being struck by an automobile on the street in front of his laboratory, and Mme. Curie carried on the work alone.

After patient and exhaustive research Mme. Curie finally succeeded in 1898 in isolating two radioactive elements. She named one of these polonium after her native country Poland, and the other, radium. She described radium as being a radioactive substance of a silvery-white color, having the atomic weight of 226. In addition to these properties, she observed the following: (1) ionization; (2) production of heat; (3) excitation of phosphorescence and fluorescence, and (4) darkening of photographic plate covered with black paper or metal.

Once again accident played a part in the development of radium, for it was through the carrying of a piece of the substance in a vest-pocket that it was learned that the substance had a powerful effect on the skin. The accidental irradiation produced a marked reaction which instigated much experimentation. It was soon observed that the newly discovered element had a decidedly destructive effect on certain types of malignant cells. And it was from this point that the therapeutic uses of radium developed in the fight against cancer.

For therapeutic purposes both the

(See opposite page)

Fig. 3—Safe in which tubes of radium and emanation are stored on right. To left is table on which technicians place seeds in implantation needles and place tubes of element into filters and wrap plaques in dam rubber.

Fig. 4—Tubes of radium being inserted into filters. Note how technicians are protected by two-inch lead shield.

Fig. 5—Running diagonally are an implantation needle with stylet enclosed and a needle with stylet removed. Center left is a plaque enclosed in dam rubber for purposes of sanitation. Next is a platinum tube containing the element, then a larger platinum tube containing a small bomb, and then an aluminum filter in which is enclosed two of the platinum tubes containing the element. To the right are some 0.3 mm. "seeds" (2 mm. and 3 mm. in length). Forceps shows relative size.

Fig. 6—Radium pump which forces emanation into fine gold tubing, by using mercury for vacuum and passing the emanation over phosphorous pentoxide, potassium hydroxide and a heated platinum coil to remove impurities.

Fig. 7—Radium pump in operation, forcing the emanation gas into gold tubing, using mercury for vacuum, gold tubing to be cut into "seeds."

Fig. 8—Safe in which are stored the tubes and seeds. The strength of these have all been measured and are kept here ready for immediate use. Note thickness of lead in the drawers.

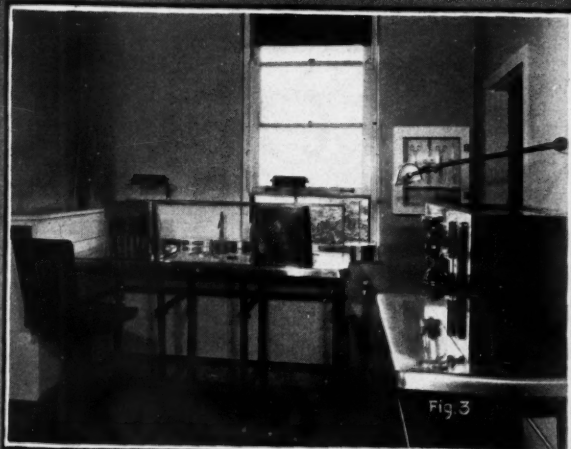


Fig. 3

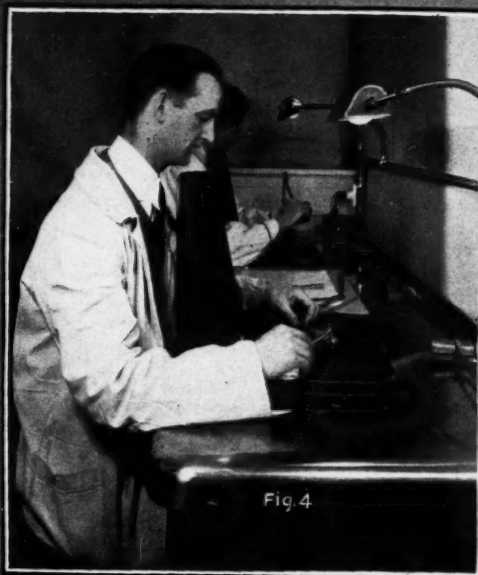


Fig. 4

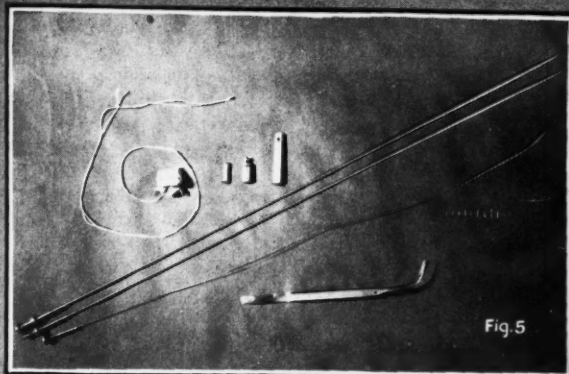


Fig. 5

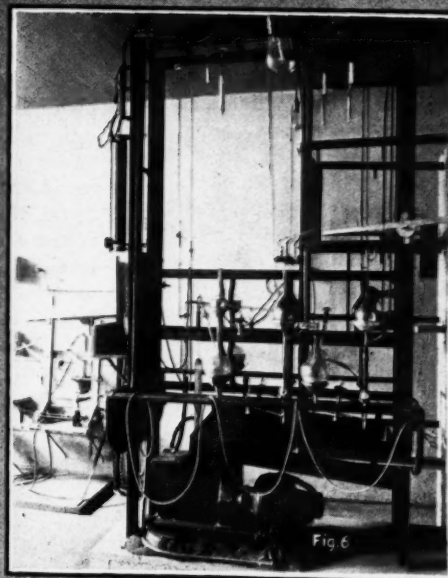


Fig. 6

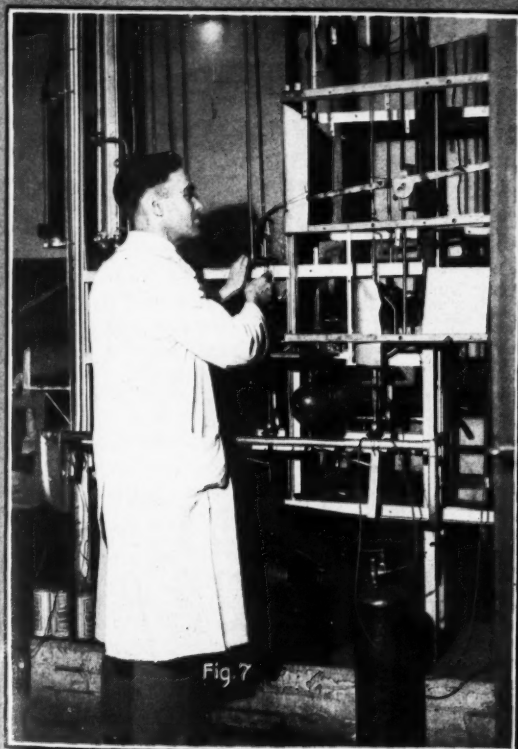


Fig. 7

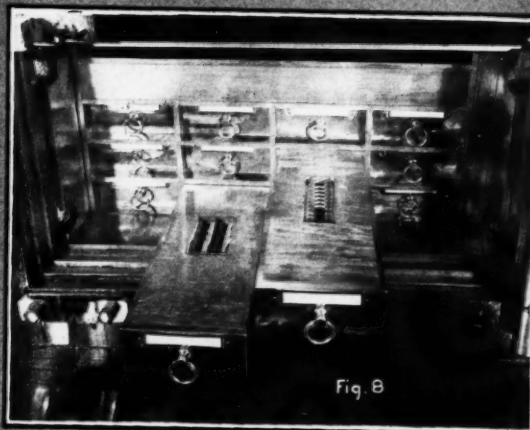


Fig. 8

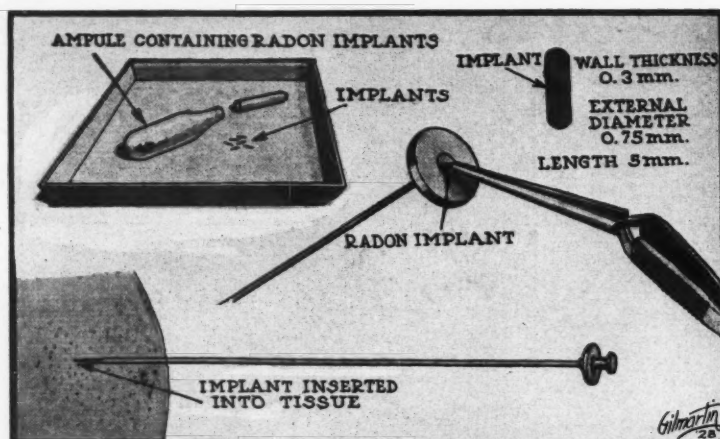


Fig. 9

element and the emanation (gas formed by the process of spontaneous disintegration) are used. The element is used in an insoluble salt combination as radium sulphate and in a soluble salt combination as either radium bromide or radium chloride. Radium is constantly disintegrating, and during this process 1 g. of the element develops 133 calories of heat per hour. Measurement of the rate of disintegration shows that in 1680 years one half of the energy of the element is spent. In another 1680 years one fourth will remain, and so on. The entire energy of the emanation is spent in approximately thirty days.

Practical use of radium in the treatment of malignant processes may be done by both external and interstitial application. External irradiation is done from a distance or by direct application. The "pack," which is a series of tubes containing the element, is used to deliver sufficient intensity to deep-seated growths, and is usually applied from a distance.

Placques are used for surface irradiation and consist of a square piece of metal upon one side of which is painted radium-impregnated varnish. Single tubes, or small bombs are used for insertion into cavities.

Interstitial irradiation is done by implanting either element or emanation, enclosed in capillary tubes, directly into the tissue. The implantation is done by means of a hollow needle, inside of which is a stylet that allows the capillary tube containing the substance to be deposited where desired. At first, glass "seeds" (capillary tubes) were used for intersti-

tial irradiation; but observation disclosed the fact that glass does not offer sufficient filtration of the soft Beta rays that cause a severe necrosis of the adjacent tissue.

Knowledge of this reaction resulted in the development by Failla of the use of finely drawn gold tubes to absorb the rays that the first few millimeters of tissue would absorb. He found that by using gold tubes having a wall thickness of 0.2 mm. about 99 per cent of the harmful Beta radiation would be filtered out. Further work on the subject resulted in the use of "seeds" having a wall thickness of 0.3 mm. This dimension is the prevailing one used for this purpose.

A consideration of the subject of filters takes us into a highly technical field, so it will suffice here to mention that many substances are used for filtration purposes. Among them are gold, platinum, lead, copper, aluminum, rubber, and even the newly developed product, cellophane.

SUMMARY

Radium is a highly radioactive substance having the properties of spontaneous disintegration, ionization, heat production, phosphorescence, and fluorescence. It has a destructive effect on the cells of malignant growths by causing chemical changes within the cells, and, therefore, is used for their treatment. For this purpose filters are used for protection of the normal tissue.

Permission to use Fig. 9 has been granted through the courtesy of the Radon Company, Inc., New York. All the other illustrations are through the courtesy of the New York State Institute for the Study of Malignant Diseases, Burton T. Simpson, M.D., Director.

THE PUBLISHER'S NOTE BOOK

ONE rather envies THE DIGEST's editor, Doctor Ryan, and its managing editor, Doctor Christian; they see all the mail! The rest of us see only the excerpts printed in the magazine.

If you've been reading the letters printed in THE DIGEST you know how many thrills the editors get. One of the pleasant things about publishing this magazine is the character of appreciation manifested by readers.

Of course, occasionally, there is someone who doesn't like the new journal at all—and says so. One such letter was printed in May; every such letter has been printed, or will be. There is no sense in trying to prove, even by implication, that the new DIGEST is perfect. Nothing is.

But, from all indications—letters from readers and the steady flow of subscriptions—the vast majority appear to like the magazine immensely.

Still, there is plenty of room for improvement and many an improvement will be made because a reader thinks of something that never dawned upon the editors. That is why Doctor Ryan will welcome not only letters praising THE DIGEST but letters carrying constructive criticism as well.

Many readers have told us that they read the magazine from cover to cover because they can see, when they look at an article, that it won't take long to read.

That, of course, is the heart and soul of the journal. The editorial "formula" embraces compression of text, consistent with clarity, and just as many illustrations as can be used to tell the story.

The DIGEST's editorial "formula" is not only new and original in its own field but, so far as is known, no other technical journal in any field presents its material in this manner.

We are convinced that the principles upon which it is built are right. But we want all the help readers can give us by way of suggestions and criticism to improve the application of these principles.

Quite frequently we receive letters during the first week of the month asking, "Where is my new DIGEST?" The magazine is mailed, not on the first, but on the fifteenth of the month of issue so don't worry if it doesn't arrive with the monthly bills!

MERWIN B. MASSOL, *Publisher*

The Editor's Page

IT is a safe guess that most of us have become deadly weary of this depression, both in talk and in reality. Probably none of us has escaped. Our practices have suffered; people cannot buy our services when they are struggling to buy food and shelter. Our savings, whether they were in stocks, bonds, or bank accounts, have melted away. Our spirits have lagged and faltered, and a mental depression has overcome us as our earnings have declined, as security prices have dropped, as real estate values have depreciated, as banks have closed their doors. Some of us may have lost our faith in the present and look with dread toward the future. Strong men are whimpering and weak men are murmuring of violence and revolution. Depression has thrown a dark pall over all.

We hold no brief for the present economic order. It would be a brave apologist who would venture words of praise for a disjointed system that permits starvation in the midst of plenty and misery and poverty in a land of almost unlimited natural resources. It requires the audacity of a political keynote speaker to offer words of praise for the present economic order.

What the future may hold is beyond prediction. Some changes in fundamental economic philosophy are certain. The trend of socialization is well under way. The rugged individualism of the frontiersmen and our forefathers is being usurped by the state. Where the pioneer built his own roads and cabins, slaughtered his cattle, taught himself, if at all, by the light of the crackling logs, we see the modern American riding over concrete roads built by the state, living in buildings that have been constructed to conform to regulations prescribed by municipal codes, eating meat that has passed a government inspection, being taught in schools or universities maintained by taxation. These, and a thousand and one other activities, are some of the evolutionary patterns along the road to socialization.

Although we may not cherish the idea of socialization (the term is not used to describe a political party but to describe the philosophy of collectivism), we should be courage-

ous enough to look at the facts of social evolution and evaluate them with intelligence and understanding. Public health laws and measures, quarantine regulations, the maintenance of hospitals by the state—all indicate that some of the problems of sickness are not of concern to the sick person and his family alone but are also of concern to society. If physical health is as important as intellectual development it is possible that in a forward moving society we might expect the state to furnish the personnel and the equipment to supply *all* persons with *all* types of medical service. Incidentally, there will probably always be the opportunities for some private medical enterprise in any economic system. In the state of the future it is likely that all citizens will be given the opportunity to avail themselves of all types of medical care as they are now given the opportunities of public education.

This is not an argument for the socialization of the medical professions. It is simply a brief statement of a possible social evolutionary tendency that may rise out of this depression. It matters very little whether or not we like the idea. If a nonindividual distributive system for medical services offers "the greatest good for the greatest number," our feeble efforts of obstruction would be, and should be, futile. As a profession we are not a group with special privileges; we should enjoy no monopoly. The medical professions are not isolated and set apart from the stream of social progress.

We know that artisans cursed and attempted to destroy the machines that ushered in the Industrial Revolution. But the Machine superseded their handicraft.

If the artisans had had the intelligence to coordinate their efforts with the machine economy, their lot would have been less dismal. We may damn and attempt to obstruct the forces of social progress and suffer the fate of the artisans. Of course, we should fight to preserve our hard-won professional gains and maintain an equitable economic position, but it should be the leadership of the profession that should direct the forces along the way to any larger socialization of health services.

REBASING OR DUPLICATING DENTURES: A METHOD OF RESTORING FACIAL CONTOUR AND CORRECTING FAULTY RETENTION

BERT L. HOOPER, D.D.S.
Lincoln, Nebraska

(Conclusion)

IMPRESSION TECHNIQUE FOR DUPLICATING A MANDIBULAR DENTURE

1. After the denture is washed, the inner surface of the denture is cut out to a depth of 1 or 2 mm. (Fig. 24), a large crosscut fissure bur being used.

2. Compound is added to the periphery (Fig. 25), the approximate area illustrated being covered throughout the entire periphery, labial, buccal, and lingual.

The denture is immersed in warm water, and, when the compound is in a moldable state, it is inserted in the mouth. The patient is requested to close slowly with a firm pressure against the opposing denture (Fig. 26). If this leaves the denture too long for the desired facial correction, the compound may be reheated and the denture placed in the mouth again until the length is satisfactory. If the facial dimension is too short, more compound should be added throughout the entire periphery; the denture should be warmed in warm water, and resealed in the mouth.

A detailed impression of the entire ridge with excess compound extending beyond the periphery should be the result at this step in the work.

If the patient is wearing a maxillary denture, it may be removed during the remainder of the work on the lower impression.

3. To perfect the periphery and to muscle trim the denture the compound is heated on the periphery in area 1, Fig. 27, an alcohol torch being used until the compound almost flows. The compound is tempered for a few seconds in warm water, and the denture is seated in the mouth.

With slight pressure downward on the teeth on the opposite side of the denture, the cheek is forced inward with the fingers, pressure also being exerted downward to keep the denture firmly seated (Fig. 28).

Area 2 is cared for similarly. The labial and buccal periphery should present a smooth detailed surface.

The lingual periphery is cared for in two steps: area 3, Fig. 27, and then area 4. The muscle trimming is accomplished in these two areas by having the patient place the tip of the tongue to the upper lip after the denture, with the warmed compound on the periphery, is seated and held firmly in place with the fingers resting on the teeth on each side. This adapts the moldable compound, as shown in Fig. 29.

4. The posterior mandibular surface (areas 5 and 6, Fig. 27) is given further treatment to create slightly more pressure at the distal extremity of the denture.

A small amount of Kerr's number 2, green compound is applied over an area of approximately 10 mm., and about 1 or 2 mm. thick. This compound is heated with an alcohol torch. The adjacent red compound is allowed to warm slightly. The compound is tempered for about five seconds in warm water, and the denture is seated in the mouth. Pressure over the second bicuspid or first molar region need not be great but should be firm. Area 5 is treated first, and then area 6 is cared for similarly. This should result in a smooth continuous surface over the entire impression. The mandibular denture is now ready for mounting on the duplicator; the method of mounting employed is the same as that used in mounting the maxillary denture described previously.

DUPLICATING TECHNIQUE TO IMPROVE STABILITY AND RETENTION: FACIAL DIMENSIONS AND CONTOUR BEING SATISFACTORY

1. A bead of compound is placed on the periphery of the denture (Fig. 30). Areas of the periphery should be cared for separately, as indicated in Fig. 8A and Fig. 8B for an upper denture, or Fig. 27 for a lower denture.

2. Each time the maxillary denture

is inserted in the mouth, pressure should be exerted upward, backward, and slightly toward the moldable compound.

3. If the ridge protrudes, and the anterior or labial periphery is cared for in a separate step, the pressure should be directed almost at right angles to the occlusal plane.

4. The muscles of the cheeks and lips are pulled down against the periphery. The result is illustrated in Fig. 31.

5. Compound is placed on the posterior border so it will contact the junction of the hard and soft palates when seated (Fig. 32). The compound is warmed and the denture is seated firmly in the mouth with the resulting impression as illustrated in Fig. 33.

6. The denture with its compound periphery should show evidence of adequate valve seal, and the remaining adaptation is perfected by means of a thin plaster wash. When seating, pressure should be used upward and backward. *Emphasis is placed on the backward pressure because the denture might lose its correct position on the ridges if this is not observed carefully.* Fig. 34 illustrates the appearance of the finished impression.

The lower denture may be duplicated similarly, or the all-compound impression may be used as previously outlined. The remaining procedures are identical with those given in the foregoing explanations.

VALUE OF DUPLICATING DENTURES

Duplicating dentures is an easy method to improve a denture that does not satisfy the patient or dentist from the standpoint of retention.

Duplicating is also an easy method to introduce a new base on a denture which has been in use so long that it is unhygienic, or which has been repaired so often that further repair is hazardous.

Fig. 24—Crosscut of a lower denture in molar region. Base is cut away to dotted line.

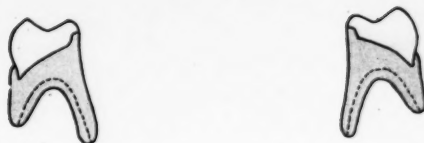


Fig. 25—Compound is placed over the entire length of periphery.



Fig. 26—Insertion in the mouth with pressure against opposing denture adapts the compound on the ridge and forces excess compound over periphery.

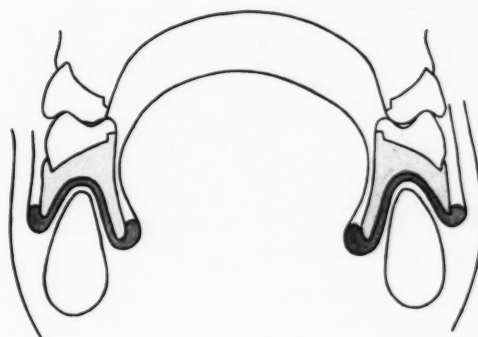


Fig. 27—Periphery is warmed, and adaptation completed on areas as described.



Fig. 28—Muscle trim by pushing the cheek in over the occlusal surfaces of the teeth above the warmed area of compound, at the same time exerting a downward pressure to keep the denture seated firmly. The opposite side of the denture is held firmly seated.

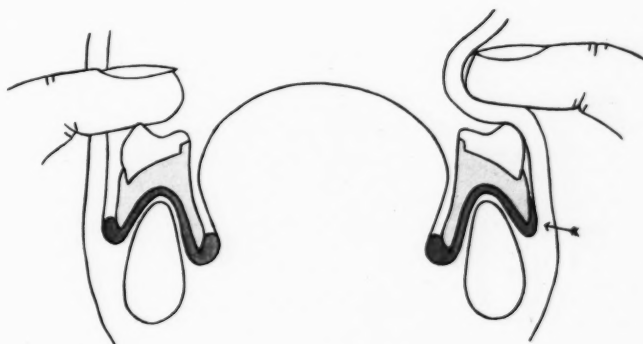
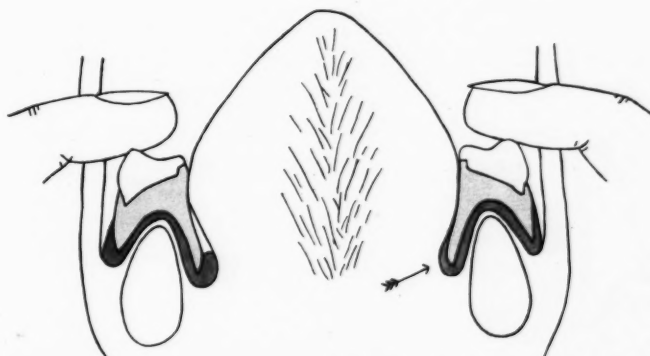


Fig. 29—The lingual periphery is muscle trimmed an area at a time, as indicated in Fig. 27, by heating the periphery in each area separately and requesting the patient to touch the upper lip with the tip of the tongue.



DUPLICATING TECHNIQUE TO IMPROVE
STABILITY AND RETENTION; FACIAL
DIMENSIONS AND CONTOUR
BEING SATISFACTORY

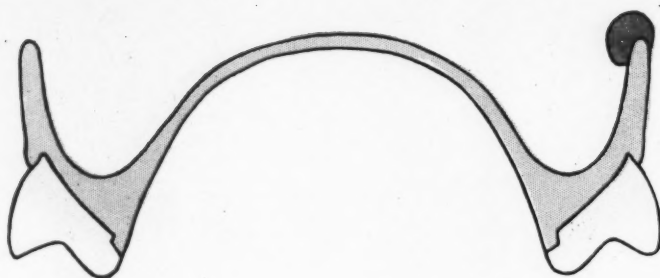


Fig. 30—Compound is applied on the periphery an area at a time, as indicated in Fig. 8 A, to perfect valve seal.

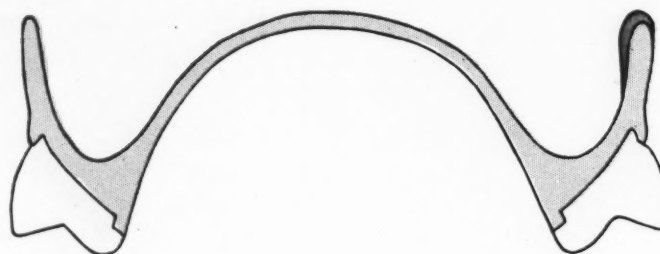


Fig. 31—After insertion in the mouth.

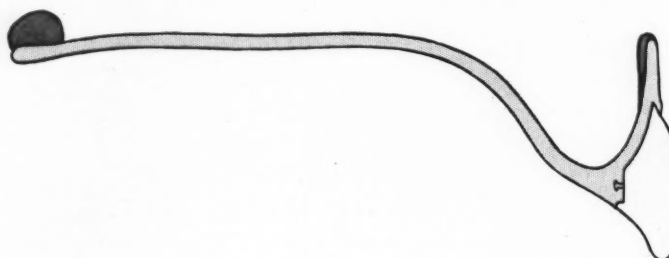


Fig. 32—A bead of compound is placed on the posterior border to complete the valve seal.

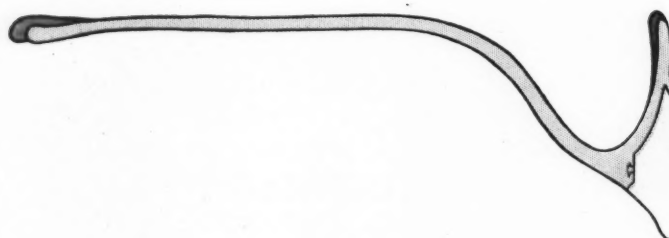


Fig. 33—The compound portion of the impression is complete.

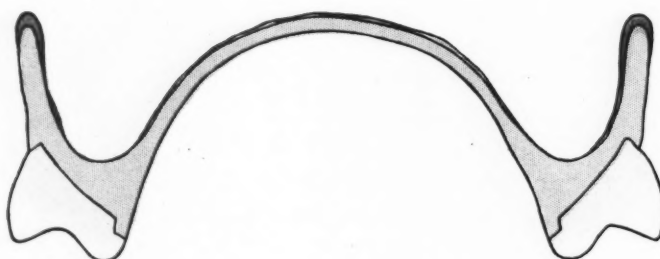


Fig. 34—A thin plaster wash completes the impression.



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ABOUT OUR CONTRIBUTORS

The biography of BERT L. HOOPER was published in the June issue of THE DENTAL DIGEST. His article "Rebasing or Duplicating Dentures: A Method of Restoring Facial Contour and Correcting Faulty Retention" is concluded in this issue.

ARTHUR O. KLAFFENBACH, D.D.S. (State University of Iowa, College of Dentistry, 1907) taught prosthetic technique at his alma mater for one year and for twelve years has been teaching clinical crown and bridge courses. Doctor Klaffenbach retired from active practice to become full-time professor and head of the Department of Clinical Crown and Bridge at the State University of Iowa, College of Dentistry. Doctor Klaffenbach is a member of the A. D. A.; Iowa State Dental Society;

Johnson County Dental Society; American Association of University Professors; Omicron Kappa Upsilon, and Xi Psi Phi. Doctor Klaffenbach is the author of numerous professional magazine articles.

LAURENCE HAMFSON MAYERS has his A.B. and A.M. from Bethany College, and his M.D. from the University of Illinois where he was associated in medicine from 1915 to 1918, and instructor in medicine from 1916 to 1917; he was also associated in medicine at Northwestern University from 1919 to 1923, where he has since been assistant professor in medicine. Doctor Mayers has been attending physician in the medical service of St. Luke's Hospital since 1920. Doctor Mayers is the author of numerous professional magazine articles. He is a member of the A. M. A.;

Illinois State and Chicago Medical Societies; Society of Internal Medicine; Institute of Medicine; Society of Medical History of Chicago; Fellow of the American College of Physicians; Nu Sigma Nu, and Beta Theta Pi. Doctor Mayers is engaged in the practice of internal medicine at 180 North Michigan Boulevard, Chicago.

LON W. MORREY received his D.D.S., in 1923, from the Chicago College of Dental Surgery where, since 1929, he has been teaching oral hygiene and preventive dentistry. Doctor Morrey is a member of the A. D. A. and the Chicago and Illinois Dental Societies, and a member of the Chicago Board of Health. In conjunction with his public health work, Doctor Morrey has written several dental health playlets: "The Bad Baby Molar," "Stepping Stones to Happiness," "The Sells-Health-O Circus," "Pandora Up-To-Date," "Grandfather Molar," appearing in this issue; and a dental health poem to appear in a later issue of THE DENTAL DIGEST.

HAROLD ARTHUR SOLOMON took his pre-dental work at Canisius College and his D.D.S. at the University of Buffalo. He is a member of the Eighth District Dental Society, New York State Dental Society, A. D. A., and Xi Psi Phi. Doctor Solomon has had both clinical and research experience at The New York State Institute for the Study of Malignant Diseases at Buffalo where he also has his general practice at 494 Franklin Street.

CLARENCE FRANK TUMA, D.D.S., has contributed previously to THE DENTAL DIGEST and his biography appeared in the March issue.

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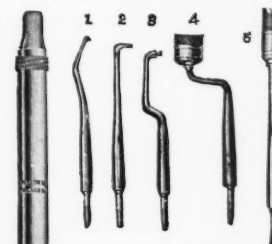
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